AUTOMOTIVE INDUSTRIES

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Charles Franklin Kettering

For him, on Nov. 10, a luncheon in honor of the twenty-fifth anniversary of the electric self-starter. The host: Alfred P. Sloan, Jr., The guests: 300 men distinguished in science and the industries.

Year-end Schedules Raised

Production Gaining Momentum After Slow Start; Rising Costs Bring Threat of Higher Car Prices

By Harold E. Gronseth

Assured of a heavy demand for their 1937 offerings, many of the motor companies have made upward revisions in their original production schedules for November. The industry's operating rate is fast catching up with that of a year ago. Most of the factories are working on heavier schedules than were set for November last year and are already hitting a faster pace. When Ford Motor Co., the last of the major producers to start on 1937 models, gets into full stride, probably late this month, the daily output of the entire industry will be on a higher level than on the corresponding date in 1935.

Despite the slower start, the current month's production still has a good chance of exceeding last November's total of 408,550 cars and trucks, and December appears definitely to be headed for the half-million mark or beyond. A total of 913,000 units will have to be built in the last two months this year for the industry to realize the popular projection of 4,600,000 units in 1936. Latest estimate places October output at 225,000 vehicles which brings the total for the first ten months this year to 3,687,000 units. If November only parallels the output of November last year, then December will have to account for 504,000 units to attain the 1936 goal.

Behind the fast gathering momentum of automobile production are two potent factors that will tend to maintain operations at the maximum rate for the balance of the year and well into 1937. First is the proven strong demand for new cars, evidenced by actual retail orders; second is the advisability of building up heavy inventories as a protection against rising costs of manufacture. The latter circumstance has become increasingly important and is entering into the calculations of the motor car manufacturers just as it has become a leading factor with all industry in the face of rising material costs. Prospective increases in steel prices have sent the car manufacturers into the steel market with heavier commitments and this, with the trend toward higher wages, has made it de-

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Show Week in Quotes

Samplings from the early speeches, in chronological order

At the luncheon in honor of C. F. Kettering, Tuesday, Nov. 10:

Said A. P. SLOAN, JR., president, General Motors:

"Let us hope we shall never be satisfied."

Said EDWIN C. HILL, radio commentator:

"I see in the Boss Kets of the country, and their organizations of men, the best exemplification of the machine age and its useful achievements."

Said EDWARD V. RICKENBACKER:

"The aircraft of tomorrow will make those of today seem like peanuts by comparison."

At the Graham-Paige dealer meeting, Wednesday, Nov. 11:

Said J. B. GRAHAM:

"The economy records established by 'Cannonball' Baker seem pale beside the economy records we have established at the factory during the past 'four long years.'"

Said JOHN W. DARR, vice-pres. CIT:

"Business is built on confidence. Disregarding the political aspects, you can bank on it that when 27,000,000 people give a vote of confidence such as that in the recent election, this confidence can be transferred onto the balance sheets of automobile dealers."

40-Hour Week for GM

New Work Program Expected to Broaden Employment

With the introduction of its new wage schedules, the General Motors Corp. plans, it is understood on unimpeachable authority, to adopt what amounts effectively to a new work-week program. While heretofore the maximum number of hours for which the normal hourly rate was paid was 48, it is understood now that this has been changed to a 40-hour basis and that time-and-a-half will be paid to General Motors employees who work in excess of 40 hours a week.

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GM Lifts Wages, Grants Bonus

Extra $1.50 Dividend Also Declared Out of 1936 Earnings Estimated at $5.25 per Share

The board of directors of General Motors Corp. announced Nov. 9 a $1.50 year-end dividend, a wage bonus of $10,000,000 and an immediate wage and salary increase which is to anticipate a 1937 final bonus. The management said it now appears that the current trend of business activity will continue, "at least as to 1937."

The dividend, which represents in dollars, the largest single disbursement ever made by the company, brings total payments this year to $4.50 a share. Earlier dividends were three quarterly payments of 50 cents and two extras of 75 cents each.

A. P. Sloan, Jr., president, said after the board meeting that the dividend now declared represents the best judgment of the board as to the balance of estimated 1936 earnings that can prudently be distributed at this time. The payments are being made from 1936 earnings estimated at $5.25 a share. The company recently reported per share net income for nine months of $3.92.

The wage bonus will amount to between $35 and $60 per individual. The wage increase is 5 cents an hour. There will also be specific salary adjustments according to merit for those earning $2400 a year or less.

The statement issued by Mr. Sloan said: "At the end of last year at Christmas time in appreciation of the efforts put forth by the organization in contributing to a better business year, there was disbursed an 'appreciation fund.' This took the form of a $25 disbursement to every member of the organization who had served the corporation for a six-months period who was not eligible under the corporation's bonus plan.

"In view of the fact that the year 1936 has likewise been a good year, similar action will be taken at the same time, except in somewhat different form as to conditions of service. The amount disbursed per individual will be a minimum of $35 and a maximum of $60 dependent on the employee's rate of pay. The amount to be so distributed will be approximately $10,000,000."

The company also announced yesterday its October sales figures. Sales of General Motors cars to domestic consumers in October were 44,274, against 68,566 in October a year ago and against 85,201 in September. Sales for 10 months were 1,391,189 against 1,019,939 last year.

Sales of General Motors cars to domestic dealers in October were 69,334 against 97,746 a year ago and against 4669 in September this year. Sales for ten months were 1,329,488 against 1,073,075 last year.

Sales to dealers in the United States and Canada together with overseas shipments were 90,764 in October against 127,054 in October a year ago, and against 19,288 in September. Sales for ten months were 1,606,856 against 1,347,236 last year. The accompanying table shows the trend in General Motors sales in domestic and foreign markets.

Balance sheet of the General Motors Corp. of Sept. 30 showed a $70,000,000 increase in cash holdings over Dec. 31, 1935, despite the payment in the interim of $137,532,623 in common and preferred dividends. Cash on Sept. 30 was $255,357,723.

Receivables at the end of September were considerably below those for Dec. 31, due to the ending of the model year in September. The December figures followed the heavy shipments of new cars to dealers.

Current liability account showed a heavy increase in the two items labelled taxes, payrolls and sundry accruals, and U. S. and foreign income and excess profits taxes. The two items this year aggregated over $87,300,000 against $50,800,000 a year ago.

Total reserves showed an increase of $31,000,000 in the year to $337,635,533, the increases coming in plant and in contingency reserves. Plants were carried at $693,906,301 on Sept. 30 against $637,771,815 last year.

	October 1936	September 1936	October 1935	Ten Months 1936	Ten Months 1935
Sales to world dealers.....	90,764	19,288	127,054	1,606,856	1,347,236
Sales to U. S. dealers.....	69,334	4,669	97,746	1,329,488	1,073,075
Sales to U. S. consumers....	44,274	19,288	68,566	1,391,189	1,019,939
Change in U. S. dealer stocks	+25,060	—14,619	+29,180	—61,701	+53,136
Sales to foreign dealers.....	21,430	14,619	29,308	277,368	274,161

Chevrolet Prices

Master	1937	1936	Change
Coach	$535	$510	+$25
Sedan	600	575	+ 25
Town sedan, trunk.	560	535	+ 25
Sport sedan, trunk.	625	600	+ 25
Bus. coupe	525	495	+ 30
Cabriolet	555	....	....
Master DeLuxe			
Coach	595	580	+ 15
Sedan	660	640	+ 20
Town sedan, trunk.	620	605	+ 15
Sport sedan, trunk.	685	665	+ 20
Bus. coupe	585	560	+ 25
Sport coupe	615	590	+ 25

Ford Prices

V8—60 H.P.	1937	1936	Ch'ge
5-window coupe	$480	....	....
Tudor sedan	495	....	....
Tudor touring sedan	520	....	....
Fordor sedan	555	....	....
Fordor touring sedan	580	....	....
V8—85 H.P.			
5-window coupe	520	$510	+$10
Tudor sedan	535	520	+ 15
Tudor touring sedan	560	545	+ 15
Fordor sedan	595	580	+ 15
Fordor touring sedan	620	605	+ 15
DeLuxe tudor sedan	580	565	+ 15
DeLuxe tudor tour. sedan	605	590	+ 15
DeLuxe fordor sedan	640	625	+ 15
DeLuxe fordor tour. sedan	665	650	+ 15
DeLuxe roadster	625	560	+ 65
DeLuxe phaeton	680	590	+ 90
DeLuxe coupe, 5-window	565	555	+ 10
Club coupe	625	....	....
Club cabriolet	690	675	+ 15
Convertible cabriolet	625	....	....
Convertible sedan	790	780	+ 10

Carrier Act Explained to Truckmen

Enforcement Methods, Tariff Construction Described; Diesels Prove Controversial Subject

The 1936 Motor Truck Show banquet marked the high point of a week's activities when more than 800 persons jammed into the Robert Treat Hotel, Newark, N. J., on Thursday evening, Nov. 5, for this third annual affair. John F. Winchester, president of the new Jersey Motor Truck Association, introduced the guests of honor at the speaker's table and then presented Ted V. Rodgers, president, American Trucking Association, Inc. Mr. Rodgers, after some preliminary words of praise, made the presentations of safety awards. One of the safe driver contest winners had piled up a half million miles of perfect driving.

Following these presentations, Mr. Winchester introduced J. Garrett Scott, chief, Section of Law and Enforcement, Bureau of Motor Carriers, Interstate Commerce Commission. Mr. Scott gave a brief report of the activities of the bureau in enforcing the regulations of the Motor Carrier Act. Discussing the problems encountered in carrying out this work, he pointed out that while over 100,000 separate carriers have filed into this Act, latest figures reveal that about 85 per cent of this number operate but one truck. Concluding his brief address, he stated, "We are attempting to build up judicial precedence in support which will last as long as the Act lasts—which will be as long as we have a motor carrier industry. And the work we will do will be thorough, careful and stable."

Timed to coordinate with the Motor Truck Show, a regional transportation and maintenance meeting sponsored by the Metropolitan, Southern New England and Philadelphia sections of the SAE, the New Jersey Motor Truck Association, the Newark Chamber of Commerce and the New Jersey Highway Users Conference, convened at the Robert Treat Hotel in Newark on Wednesday afternoon, Nov. 4.

"Tariffs," a paper prepared by

Griswold B. Holman, manager, George B. Holman & Co., Inc., and agent and secretary of the Household Goods Carriers' Bureau, was the only paper read at the first session. In concluding his presentation, Mr. Holman gave some amusing examples of individual tariffs that have been filed among which was a letter with the statement by one obviously puzzled person who wrote, "I am not able to hire a lawyer every time you send a letter so I must have plainer language." J. C. Church, technical advisor attached to the Household Goods Carriers' Bureau, spoke

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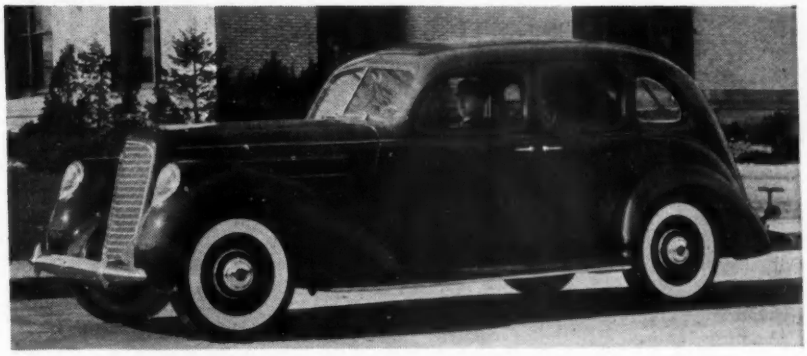

The 1937 Lincoln V-12 seven-passenger sedan

Body Refinements Mark New Lincoln

Twenty-One Types of Body Include Custom Designs; Two Wheelbase Lengths Available

New models of the Lincoln car, with improvements in body lines, more comfortable interiors, and a number of mechanical changes, had their first public showing at the Hotel Astor in New York on Nov. 11. In the design of the new bodies, modern ideas in aerodynamic design and appearance are conservatively applied. Headlamps are now recessed in long, sweeping fenders, and the curved rear deck inclines gracefully to emphasize the length and new, lower appearance. Door openings are extended to the running boards, thus affording easier entrance.

Body interiors are entirely new. Garnish moldings now are in one continuous piece around each window, with flush surfaces throughout and decorated with burl walnut inlay edged by a narrow pewter inlay. Upholstery is in a new design of plain-panel style, with seat backs, cushions and door panels embellished by an ornamental double riser. Hassocks are used in place of foot rests. The robe-rail is nickel-plated and the luggage compartment in the rear deck has been enlarged. Unless otherwise specified, the spare tire is carried in the luggage compartment.

The Lincoln, which is equipped with a V-12 engine of 150 hp., is built in two lengths of wheelbase, 136 and 145 in., depending on the style of body fitted. There are twenty-one types, including custom designs by Brunn, Judkins, Willoughby and LeBaron. Bodies by Lincoln include a five-passenger sedan, in either two- or three-window types; seven-passenger sedan and seven-passenger limousine. Those by LeBaron are a two-passenger coupe, a convertible roadster and a convertible sedan. Brunn contributes a convertible victoria, cabriolet, non-collapsible or semi - collapsible, a brougham and a touring cabriolet; Judkins a berline in either a two- or a three-window type and a sedan-limousine; and Willoughby a limousine, panel brougham, five-passenger victoria, sport sedan and seven-passenger touring.

Among the mechanical improvements embodied in the new model, mention should be made of the hydraulic tappet adjusters which render the engine more quiet in operation. In conjunction with the adoption of these tappet adjusters, the camshaft was redesigned.

Brake drums are now of cast iron. New, louder horns are located under the hood. Windshield wipers, which on most types are pivoted at the bottom, have a tandem drive by chain. The headlamp switch is now on the instrument panel, while the dimming switch is foot-operated and located on the floor. The steering wheel, of the triple-spoked type, and the instrument panel, are of new design. Use is made of the all-metal roof as a radio antenna, the roof being insulated from the side panels.

New Chrysler Bonus

Sixty-seven thousand employees of the Chrysler Corp. will receive a bonus of $4,000,000 in December. This will be the third bonus granted this year, and will bring the total extra compensation to Chrysler employees during 1936 to $8,300,000.

To be eligible, employees must be working during the week of Dec. 14 and must have been on the company's payroll during the first quarter of the year. The payments are to be based on length of service. The bonus will apply to all employees of the Chrysler Corp. including the Dodge and Plymouth divisions and will extend to the company's plants in England and Belgium.

Chrysler Declares Record Dividend

$5.50 for Third Quarter Brings Total Payments for Year to $12 per Share

Directors of Chrysler Corp. on Nov. 10 declared a dividend of $5.50 a share, a record amount for any single quarter. This brings total dividends to be paid this year to $12 a share, compared with $2 for all of 1935.

The company reported net income for the first nine months of the year of $41,975,327, equal to $9.63 a share, against $23,184,458 or $5.35 a share for the like period in 1935. Nine months' earnings set a new record. Earnings were calculated after all charges and taxes including surtax for the period.

Indicated net income for the September quarter, based on a comparison of reports, was $12,501,591 or $2.80 a share, against $4,525,149 or $1.04 a share for the third quarter of last year. For the June quarter of 1936, net income was $18,020,297 or $4.18 a share.

Sales for the nine months ended Sept. 30 were $479,819,688 against $366,711,178 last year. Sales in units, a record, were 768,503 against 599,415 in the 1935 period. The gain was 30 per cent.

The company has just announced, in addition to the dividend declared this week, a special wage bonus of $4,000,000 equal to 92 cents a share.

The balance sheet showed a total of cash and marketable securities as of Sept. 30 of $68,779,185 with net current assets of $71,799,735. There are no bank loans or notes payable. Amount of the dividend declared yesterday is $24,662,000. The dividend alone was more in dollars than the depression low for the stock which was 5. Total dividends for the year will amount to $53,808,000.

The report showed depreciation and amortization charges for the nine months of $8,958,598 against $14,618,282 for the 1935 period. The difference was due to a change in accounting methods which will probably result in larger charges in the fourth quarter.

"Iowa Plan" Debated by API

Experience Indicates System Profitable, Even Where No Chain Store Tax Exists

Considering the half dozen or so problems that are the outstanding issues in the oil industry at the present time, more than 3000 members of the industry met in Chicago this week for the 17th annual convention of the American Petroleum Institute.

Among these problems were the "Iowa plan," by which companies are leasing their retail service stations to station managers as a means of escape from heavy state chain store taxes; attempts to correlate crude production with consumption of refined through the stabilization efforts of the interstate oil compact; attempts to avoid over-production of gasoline while producing fuel oil during the winter months; establishment of industrial relations programs; and issues pertinent to the refinery, marketing and production divisions.

Lobby discussions were concerned chiefly with informal debates on the merits of the "Iowa plan." It was an entirely new issue at this convention, and feelings both for and against it were expressed freely. Papers treating with experiences under the plan from the viewpoints of refineries, distributors and retailers were read before the meeting of the division of marketing. The feeling was general that it was proving beneficial in reducing the number of non-paying stations while increasing sales at stations which have proved themselves paying.

Action by the United States Supreme Court, Nov. 9, throwing out the gross receipts phase of the Iowa chain store law, threw considerable speculation into the convention as to what the attitude of marketing companies would be. The feeling was expressed, however, that the experience of the companies that have adopted the plan, either for all the states in which they operate, as the Standard of Indiana, or those which have adopted it only in states having chain store levy laws, are satisfied with today's situation and will not revert back to their old system of operating their own stations.

Axtell J. Byles, president of the API, scoffed at the suggestion that the country was threatened with an early exhaustion of the petroleum reserves. "Far from being scared of scarcity, we are more concerned with rational and sensible utilization of an overabundance," he said.

Dangers of government ownership of the oil industry were discounted by Congressman Samuel B. Pettingill, who was a member of the Cole congressional committee which investigated the industry in 1934, if "the industry takes care not to permit a monopoly to come into control of its affairs." He declared that any monopoly, or attempt at one, would surely result in the government tightening the reins. Congressman Pettingill spoke on "The Survival of Private Enterprise."

Discussions of automotive equipment occupied an entire session of the division on marketing. C. Wesley Boag, of the Heil Co., talked on "The Truck Tank, a Conveyor of Petroleum Products and the Developments which Called it into Use." An "Analysis of Truck Designs with Special Reference to Tank Trucks," was given in a paper read by R. G. Cass, of the White Motor Co. And, speaking from the viewpoint of the trucking industry, Ted V. Rodgers, president of the American Trucking Associations, Inc., urged "Cooperation for the Trucking Industry."

Directors of the American Petroleum Institute were increased from 96 to 105.

Boosts Average

As mentioned in the news section of AUTOMOTIVE INDUSTRIES last week, Ethyl Gasoline Corp. has just worked out a new method of rating gasolines so as to produce better correlation between the test method and behavior of gasolines in the car. The principle is new and requires some technical explanation for a complete understanding of it. To this end, Ethyl has prepared a technical bulletin entitled "Correlation of Laboratory Knock Testing Engine Ratings with Knocking in Automobiles." It's just off the press and only a limited number of copies have been distributed. We are assured by the technical department of the company that they will be glad to accommodate a reasonable number of requests for this bulletin from our readers.

Hippolyte Saurer

Hippolyte Saurer, head of the Adolf Saurer Co. of Arbon, Switzerland, died at Vienna, Austria, Oct. 25. He was the son of the founder of the concern, which originally was a general machine shop and later specialized on embroidering machinery. During the 1890's, the manufacture of gasoline engines was taken up, engines being built for both marine applications and for road vehicles.

The first Saurer automobile engine went into a Koch touring car, built in 1896. It specialized on commercial vehicles, and licenses for the manufacture of Saurer trucks and buses were let in numerous countries, including the United States, where the Saurer Motor Co. of Plainfield, N. J., was merged with the Mack Brothers Motor Car Co. of Allentown, Pa., in 1911 to form the International Motor Co.

The Saurer firm has always been actively engaged in research and development work, and in a statement issued only last March, Hippolyte Saurer said that license fees received from abroad enabled it to support a highly developed technical organization and to sell its products at competitive prices in spite of the lack of a large home market and the consequent impossibility of large-scale production.

Graham Outlook Bright

Sale of 40,000 Cars Forecast at Dealer Lunch in N. Y.

Announcing the appointment of metropolitan distributors in New York and Brooklyn, that the sales quota for Graham dealers would be 40,000 units in 1937, and that the company would spend $1,000,000 for newspaper advertising in the next year, Joseph B. Graham found much of an encouraging nature in the outlook for 1937.

Nearly 1000 Graham dealers and their guests gathered during show week to hear the presentation of the factory's program.

Graham advertising plans were presented by E. E. Rothman, recently appointed director of advertising, who disclosed that Graham advertising will concentrate on the supercharger, and the performance and economy which it makes possible in Graham products.

Preceding this announcement "Cannonball" Baker described a new economy run from Detroit to New York during which a standard Graham car, supercharger equipped, made 28.96 m.p.g.

Noting the absence of his brother, Robert, J. B. Graham explained that his brother was in Antwerp, following Graham's first exhibit in the Paris and London automobile shows.

F. R. Valpey, vice-president and general sales manager of the company was toastmaster, introducing additionally, James Dalton, editor of *Motor*, W. H. Neely, Graham design chief, L. W. Thoms, assistant general sales manager, and John W. Darr, vice-president of CIT, Inc.

Geschelin to Speak at Dayton

Joseph Geschelin, Detroit technical editor, AUTOMOTIVE INDUSTRIES, will address a joint meeting of Dayton Section, SAE, and Dayton Chapter, ASME, on Nov. 23. The talk will touch upon the contribution of automotive parts makers to the development of new car models; an analysis of the more important engineering changes for 1937; and some comment on the engineering developments in the offing. The discussion will be rounded out by notes on some of the interesting developments in production.

40-Hour Week for GM

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While no official confirmation of this report is available, its source is of such a character as to indicate its truth. It is believed that such a policy will have a considerable effect in broadening employment in General Mootrs plants. On the other hand, no influence is seen on the stabilization of employment.

Year-end Schedules Raised

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sirable to build up bigger inventories both of materials and finished cars.

The situation has raised the question of how long the initial prices of 1937 models will stand up. Anticipated gain in volume during the coming year will offset some increase in manufacturing costs but car makers are not too confident that current prices can be held throughout the coming year.

Studebaker sales of trucks and passenger cars totaled 12,152 units in October—the best October sales in 12 years, said Paul G. Hoffman, president.

Production of Buicks during October amounted to 19,525, the largest month's output this year. On Nov. 1 there were approximately 30,000 unfilled orders on hand at the factory and an additional 20,000 on file at zone points, said Harlow H. Curtice, president. These constitute the largest bank of new business in the recent history of the company.

Graham October shipments were the best for any month since 1929 and November schedules call for shipments exceeding even the 1929 record for that month.

Production and sale of Packards are continuing at a rate far in excess of all previous records in the company's history, announced M. M. Gilman, vice-president and general manager. Cars shipped in October amounted to 11,036 and deliveries were 9911. In September shipments were 10,161 and deliveries 8334. To date, more than 22,000 1937 Packards have been shipped. Unfilled orders total 16,000.

New Contract Rulings

Walsh-Healey Provisions Further Explained by Labor Dept.

Where a dealer quotes a manufacturer's price on a government contract and instead of filling it from his stock has the factory ship direct to the government the manufacturer will be required to conform to the provisions of the Walsh-Healey government contracts act. This ruling was approved this week by Secretary of Labor Frances Perkins in passing on agency contracts. It was held that the dealer under such a circumstance will be deemed an agent acting for an undisclosed principal and that the manufacturer will be presumed to be a party to the contract.

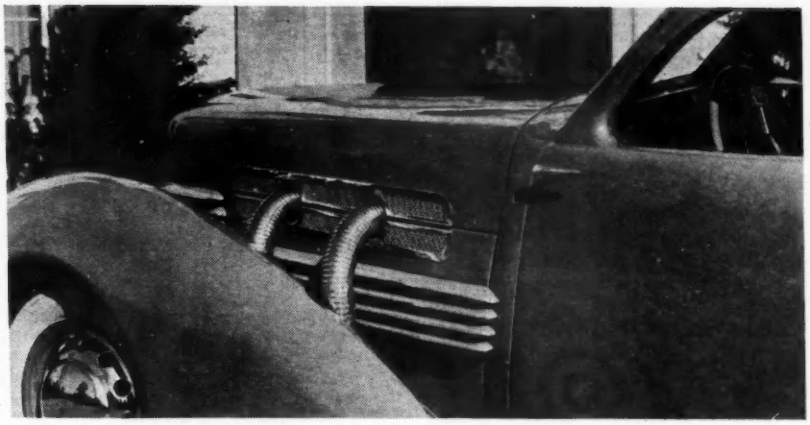
Another ruling approved by Miss Perkins under the act prohibits all encroachments upon the minimum earnings of employees. It therefore forbids deduction of rent in the case of company-owned houses, medical expenses, dues for benefit associations, etc., it was pointed out, where such deductions cause the net wage to fall below the minimum. The ruling does not, however, forbid deductions so long as the wage does not fall below that level. It was held that the section is not limited to wage kickbacks but is intended to prohibit all encroachments upon the minimum earnings of employees.

It was also held in another ruling that contracts for petroleum products are not exempted from the operation of the act unless these products are purchased without competitive bidding. Where proposals are solicited for quantities of oil in amounts exceeding $10,000, the act is applicable. In contracts for the delivery of crude oil where the contractor is a producer, the act covers the employees engaged in extracting the oil and preparing it for shipment.

In contracts for gasoline, kerosene, benzine, fuel oil and other petroleum products where the contractor is a refiner, the act applies to employees engaged in manufacturing, that is, the employees at the refinery engaged in the refining processes and preparing the oil for shipment. Where the contractor is a dealer the act applies to employees at terminals, warehouses and bulk storage tanks including warehousemen and others testing the lot out of which the government order is filled, and the crews engaged in loading the material in vessels, tank cars or tank wagons for shipment.

Hupp Stockholders' Meeting Dec. 7

Stockholders' meeting of Hupp Motor Car Corp. which, after several postponements, had been scheduled for Nov. 7 has again been deferred to Dec. 7.



On each side of the new 170 hp. supercharged Cord two exhaust pipes, covered by flexible stainless steel jackets, extend from the hood down through the fender.

Crowds Throng Show

Trailers, Mechanical Exhibits Vie for New York's Attention

Opened to a surging crowd which spread quickly to all four floors of the Grand Central Palace in order to find necessary breathing space, the Thirty-Sixth Annual National Automobile Show turned New York's Armistice Day into the beginning of a competitive sales battle which may push 1937 car production over the five million mark.

Automobile executives present on the opening day reported, almost without exception, that they had come from factories whose production schedules were being stepped up beyond preliminary estimates; factories which were behind in filling orders on the books.

It was freely predicted in advance that house trailers, of which 35 were on display, would "steal the show." The trailer floor was crowded to capacity a few minutes after the show opening but not, apparently, to the exclusion of interest in the new cars.

The decorative background of the exhibits was seen as the best in years by many who attended. Mechanical exhibits included many novelties which enabled the public to penetrate more deeply into constructive knowledge of the cars on display.

Chevrolet's First Day Brought 35,000 Sales

Chevrolet dealers delivered 35,000 new models to customers on Nov. 7, opening day in Chevrolet's 1937 campaign. Unfilled orders at the factory are reported to total 120,000. A strong trend to master deluxe models of the Chevrolet line was evident.

Extension of Chevrolet's experimenting with the closed territory plan operated provisionally in the Atlanta and Rochester zones is foreshadowed by the announcement that the plan would be continued in the zones named.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES

General business activity continued to improve last week, and one weekly index of business activity registered a new high for the recovery movement for the seventh consecutive week. Retail business was estimated from one to three per cent. above that in the preceding week. Wholesale trade showed a slight gain above that in the preceding week and a rise of from 18 to 20 per cent above that in the corresponding period last year. Production of electricity during the last week in October rose to another peak, indicating a continued rise in manufacturing activity as well as the effects of cold weather in some sections of the country. The elections were followed by an upturn on the stock market and heavy foreign buying of American securities.

Carloading Steady

Railway freight loadings during the week ended Oct. 31 totaled 814,175 cars, which marks a decline of 1797 cars below those in the preceding week, a gain of 132,177 cars above those a year ago, and a rise of 201,127 cars above those two years ago.

Power Output Rising

Production of electricity by the electric light and power industry in the United States during the week ended Oct. 31 was above that in the preceding week and surpassed that in the corresponding period last year by 14.7 per cent.

Lumber Business Good

Production of lumber during the week ended Oct. 24 was 70 per cent of the 1929 weekly average. New orders continued slightly above output, and shipments were nine per cent below production.

Oil Production Heavy

Average daily crude oil production for the week ended Oct. 31 amounted to 3,043,500 bbl., as compared with 3,083,050 bbl. for the preceding week and 2,798,350 bbl. for the corresponding period last year.

Soft Coal Output Rises

Production of bituminous coal during the week ended Oct. 24 amounted to 9,710,000 tons, which marks an increase of 48,000 tons above that in the preceding week and 1,405,000 tons above that a year ago.

Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended Nov. 7 stood at 84.7 as against 84.5 the week before and 84.0 two weeks before.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended Nov. 4 showed an increase of $1,000,000 in discounted bills. Bills bought in the open market and government securities remained unchanged. Money in circulation increased $76,000,000, and the monetary gold stock rose $27,000,000.

Henry B. Joy

Henry B. Joy Dies

Former Packard President Noted for Widespread Interests

Henry B. Joy, former president of the Packard Motor Car Co. and a pioneer in the good roads movement, died at his home in Detroit, Nov. 6, after an illness of several weeks. He would have been 72 years old on Nov. 23.

Born in Detroit, Mr. Joy was the son of wealthy parents. His business career began as office boy for the Peninsular Car Co. of which he later became assistant treasurer. He was also interested before the turn of the century in mining ventures and was an official of the Detroit Union Depot Co. Mr. Joy served as receiver of the Chicago & Grand Truck Railway Co. from 1900 to 1903.

When the first horseless carriages began to appear, Mr. Joy's interest turned to the new means of locomotion. Looking over the cars then on sale in Broadway showrooms, he decided on one of the early products of the Ohio Automobile Co. He became a frequent visitor at the Warren, Ohio, plant where J. W. Packard and his brother were making the cars. As a result, he decided to invest $25,000 in the company, which was later moved to Detroit, when the capital was increased to $500,000 and the name changed to the Packard Motor Car Co. Mr. Joy was, from 1901 to 1918, president of the company.

During the World War it became evident to Mr. Joy that the United States would be drawn into it as a result of the German submarine campaign and he was a leader in the movement for preparedness. He wrote articles and gave interviews denouncing President Wilson's foreign policies and advocated universal military service. He helped to bring about the development of the Liberty airplane engine to equip American military planes.

Mr. Joy's interests were widespread. Besides campaigning for better highways, he was, during the prohibition era, one of the nation's leading advocates of repeal of the 18th Amendment and contributed generously to the fight against it. In his later years, Mr. Joy became an ardent amateur radio fan and operated short-wave stations at his home, and on his farm and yacht. Many amateurs who will miss his voice over the air never knew that their Detroit radio friend was the famous industrialist.

Surviving Mr. Joy are his widow and two children, Henry B. Joy, Jr., and Mrs. Helen Joy Taylor.

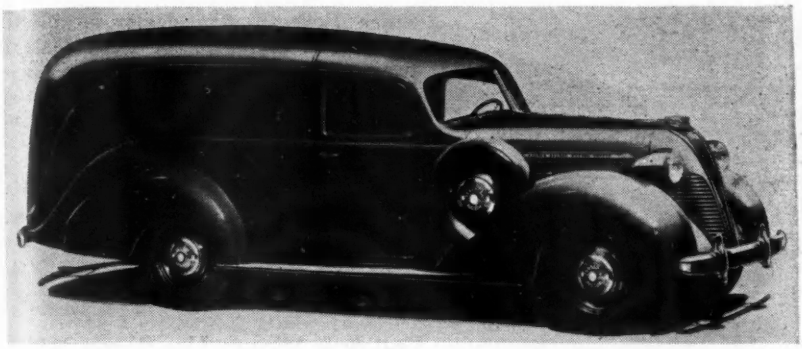
40 Years Ago

with the ancestors of AUTOMOTIVE INDUSTRIES

Alexander Winton, mechanical superintendent of the Winton Bicycle Co., Cleveland, Ohio, tested a motor carriage of his construction last month with very satisfactory results. The vehicle, which is propelled by a gasoline motor, has two seats arranged dos-a-dos and bicycle wheels fitted with 4 in. pneumatics. One lever steers the vehicle and controls the speed. Mr. Winton said:

"The transmission gear is not fully covered in the patent office yet, so I do not care to say anything on that point just at present. I may say, however, that the Winton vehicle, to carry four persons, will have an 8 hp. improved gasoline motor which is fully covered by patents. The important points are the hydro-carbon feeder, the electric ignitor and the regulator . . . The governor is pneumatic and by pressing a button the speed of the motor can be varied from 200 r.p.m. to 700 or 800 if necessary. The engine is entirely self-oiling. . . . A condenser or cooler is used to reduce the temperature of water for cylinders."

—From *The Horseless Age*, November, 1896.



Terraplane ¾-ton custom panel delivery for 1937

Terraplane Commercial Cars

Five Body Models Offered on Chassis with Reinforced Frame, Heavy-Duty Transmission and Over-Size Rear Axle

Hudson Motor Car Co. is now offering a line of Terraplane commercial cars on a 117-in. wheelbase chassis. It consists of a ¾-ton panel delivery, a ¾-ton cab pick-up express, a utility coach, a utility coupe pick-up, and a station wagon.

Frames of the commercial car chassis are of new double-drop 2X type. Its side rails are 7⅛ in. in depth and there are two X-members and additional transverse braces. The design of the frame is said to be such as to give an unusually low center of gravity.

This chassis is powered with a 96-hp. Terraplane engine, a heavy-duty transmission, and an "over-size" rear axle. There are two roller bearing universal joints and direct-action, two-way shock absorbers in the front. Duo-automatic hydraulic brakes are standard equipment. The cab from the floor to the roof is 49 in. in height. The width of the cab from the instrument panel to the rear is 36⅜ in., the width at the floor, 55½ in. "Electric Hand" shift is available and where it is used there is no obstruction by control levers in the cab.

The panel delivery has a capacity of 1500 lb., the same as the ¾-ton cab pick-up express. The load space in the latter is 85 in. long by 47⅞ in. wide and 16⅛ in. deep. The box body has steel lockers extending from the front to the rear on both sides, solidly bolted into place. These square up the load space, covering the wheel housings and furnishing a convenient space for carrying chains, tools, jack, and other articles.

The utility coach looks like a passenger car of advanced styling and can be used as such. But the back seat lifts out, providing a carrying space of 113.6 cu. ft. with 1000 lb. cargo capacity. It is closely paralleled by the utility coupe, which also has an exterior appearance resembling a passenger car, but which can be converted quickly into a utility pick-up with a box type body behind the front seat. The length of the rear compartment is 66¾ in., the width 48 in., and the height 26 in., giving a total capacity of 44 cu. ft.

Several new features are incorporated in the station wagon for 1937. It has a capacity of seven passengers besides the driver. When used for baggage or other loads it has a useful space of 85½ in. by 56 in. from dash to tail gate.

All of the commercial cars are available with the "Electric Hand," and where greater horsepower may seem desirable a high-compression cylinder head, which increases the output to 102 hp., is available at extra cost.

8 New Members for MEMA

Eight more manufacturers of automotive products have become affiliated with the Motor and Equipment Manufacturers Association.

They are: General Lead Batteries Co., Newark, N. J.; Marnall Steel Products, Inc., New York, N. Y.; Noera Manufacturing Co. (division of Chase Brass & Copper Co., Inc.), Waterbury, Conn.; Publicker Commercial Alcohol Co., Philadelphia, Pa.; Reynolds Manufacturing Co., Dallas, Tex.; Frank Rose Manufacturing Co., Hastings, Neb.; Tele-Radio Corporation, Newark, N. J.; Wickwire Spencer Steel Co., New York, N. Y.

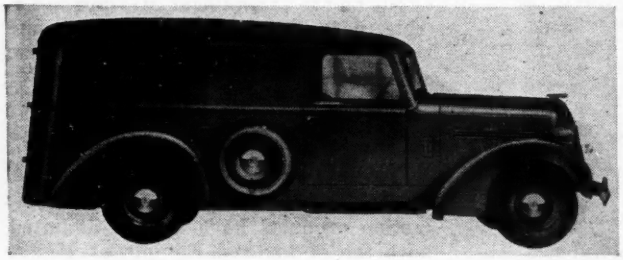
Perfect Circle Regular Dividend

The board of directors of the Perfect Circle Co. declared the regular quarterly dividend, due Jan. 1, 1937. The payment of this dividend of 50 cents a share on the 162,500 shares of common stock outstanding, has been moved forward and will be made on Dec. 15 to stock of record Nov. 25.

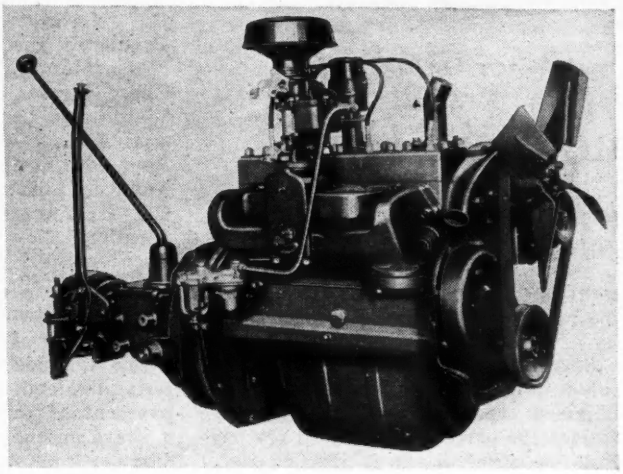
Nine Months' Exports $174 Million

Exports and Imports of the Automotive Industry for September and Nine Months Ended September, 1936-1935

	SEPTEMBER 1936		SEPTEMBER 1935		NINE MONTHS ENDED SEPTEMBER 1936		1935	
	No.	Value	No.	Value	No.	Value	No.	Value
EXPORTS								
Motor vehicles, parts and accessories		$ 12,450,770		$ 13,321,813		$ 174,542,113		$ 171,871,830
PASSENGER CARS								
Passenger cars and chassis	4,445	2,796,572	5,622	3,247,376	125,645	70,784,024	125,982	70,823,431
Low price range $850 inclusive	4,022	2,228,689	5,077	2,665,711	115,838	59,652,045	116,681	60,806,910
Medium price range over $850 to $1,200	287	284,882	328	316,787	7,937	7,638,092	6,842	6,489,024
$1,200 to $2,000	65	108,169	78	123,642	1,245	1,854,049	988	1,516,411
Over $2,000	71	194,832	42	101,308	625	1,639,836	631	1,666,192
COMMERCIAL VEHICLES								
Motor trucks, buses and chassis (total)	6,352	3,765,432	7,061	3,787,844	81,242	41,658,289	73,657	38,321,898
Under one ton	833	331,049	677	256,051	12,724	4,832,972	6,549	2,274,893
One and up to 1½ tons	4,405	2,261,996	4,998	2,360,739	53,826	24,946,744	53,980	24,764,703
Over 1½ tons to 2½ tons	904	793,777	1,149	873,645	10,633	7,786,296	10,944	8,093,333
Over 2½ tons	183	351,175	222	265,088	2,209	3,205,773	1,754	2,825,669
Bus chassis	27	27,435	22	24,781	1,850	886,502	211	258,065
PARTS, ETC.								
Parts except engines and tires								
Automobile unit assemblies		2,212,979		3,580,385		31,282,114		35,474,715
Automobile parts for replacement (n.e.s.)		2,364,183		1,967,101		19,826,137		19,543,890
Automobile accessories (n.e.s.)		325,728		297,802		2,415,948		2,237,514
Automobile service appliances		483,114		320,047		3,347,806		3,050,441
Airplanes, seaplanes and other aircraft	20	468,840	49	649,828	372	8,065,939	266	5,562,576
Parts of airplanes, except engines and tires		608,598		322,721		4,192,319		3,773,106
INTERNAL COMBUSTION ENGINES								
Stationary and Portable								
Diesel and semi-Diesel	35	35,925	20	53,201	291	843,201	229	593,669
Other stationary and portable:								
Not over 10 hp.	1,222	62,420	726	44,195	8,906	547,270	7,288	412,661
Over 10 hp.	181	91,403	138	82,522	1,743	730,045	1,174	665,363
Automobile engines for:								
Motor trucks and buses	2,400	239,523	542	68,233	17,917	1,741,201	3,444	476,101
Passenger cars	3,202	262,361	201	12,997	36,682	2,563,917	19,192	1,232,876
Engines and aircraft	120	812,209	27	125,692	616	3,358,957	412	1,689,236
Accessories and parts (carburetors)		137,636		118,650		1,440,743		1,202,749
IMPORTS								
Automobile and chassis (dutiable)	144	56,357	51	26,042	647	306,436	414	206,413



Reo Speed Delivery model.



The economical four - cylinder Reo Silver Crown engine.

Ford Sets '37 Goal

Dealers Told Sale of 1,300,000 Is Aim for Year

Sale of 1,300,000 Ford V-8 cars and trucks in 1937 is the goal Ford Motor Co. placed before the 8000 dealers gathered in Detroit Nov. 7 and 8, for the largest sales convention in the history of the motor industry. W. C. Cowling, sales manager, told the dealers they would also be expected to handle between $475,000,000 and $500,000,000 worth of used cars in connection with their new car sales program for the year.

The dealers, who filled the huge coliseum of the State Fair Grounds, were welcomed by Edsel Ford, president of the company. After listening to addresses by W. C. Cowling and his assistant, J. R. Davis, dealers were given a preview of the 1937 line. They were served lunch in relays because of the large number to be accommodated. The dealers were then transported in buses to Greenfield Village where Stark Hickey, Detroit dealer, as spokesman for a committee of Ford dealers, presented Henry Ford with the Cape Cod windmill that had been moved from West Yarmouth, Mass., and re-erected in Greenfield Village.

Friday night the dealers were guests of the Ford company at a banquet and entertainment program in the coliseum. Saturday was devoted to visiting the Ford and Lincoln plants.

Collins & Aikman Ups Wages 10%

A 10 per cent increase in wages for all employees, with the exception of the executive class, effective the week ending Nov. 21, is announced by W. G. McCullough, president of Collins & Aikman Corp.

The company, world's largest manufacturers of mohair velvet upholstery fabrics for automobiles and furniture, employs thousands in its plants in Rhode Island, Pennsylvania and North Carolina, all of whom are affected by the increase.

Black & Decker Bonus

"Turn about is fair play," says S. Duncan Black, president of Black & Decker Mfg. Co., Towson, Md. "All members of the organization, during the depression, willingly accepted very severe curtailment of their compensation and now that the company is again able to earn a substantial profit this is to be shared with its employees."

A Christmas bonus in the form of two weeks' extra pay has been announced by the company.

E. R. SNELL, for the past three years assistant in the department of organization and analysis of the Buick Motor Co., has been promoted manager of the department.

CHARLES C. WILCOX, who has been associated with General Motors since 1926, for the past three years in sales promotion and budget activities, has been named manager of budgets of the Buick Motor Co.

DON E. BATES, president and general manager, and **ELIJAH J. POXSON,** general sales manager, of the Reo Motor Car Co., have returned home after an extensive trip

September Financing Up 56%

Big Gain Registered Over Same Month Last Year; Average per New Car Reaches $590

The dollar volume of retail financing for September, 1936, for the 456 reporting organizations, amounted to $128,150,101, a decrease of 12.8 per cent compared with August, 1936, but an increase of 56 per cent when compared with September of last year.

The $57,578,092 shown for wholesale financing for September, 1936, is a decrease of 55.7 per cent from the preceding month and an increase of 39.4 per cent compared with September, 1935.

Average financing per new car was $590 and per used car, $256.

The accompanying table gives detailed figures as compiled by the Bureau of the Census.

Year and Month	Wholesale Financing Volume in Dollars	RETAIL FINANCING											
		TOTAL			NEW CARS			USED CARS			UNCLASSIFIED		
		Number of Cars	Total Amount	Per Car	Number of Cars	Total Amount	Per Car	Number of Cars	Total Amount	Per Car	Number of Cars	Total Amount	Per Car
September, 1936	$57,578,092	2,324,435	128,150,101	395	134,052	79,109,712	590	188,045	48,212,845	256	2,338	827,544	354
August, 1936	129,865,102	367,024	147,002,587	401	160,083	94,017,673	587	204,613	52,123,841	255	2,328	861,073	370
September, 1935	41,318,194	229,302	82,148,583	358	85,395	47,988,826	562	141,597	33,339,341	235	2,310	820,416	355
9 Months, 1936	1,309,242,244	3,368,624	1,347,631,954	400	1,510,295	871,990,151	577	1,837,257	468,174,127	255	21,072	7,467,676	354
9 Months, 1935	1,033,444,099	2,399,683	881,208,136	367	1,001,469	548,385,212	548	1,360,530	319,230,479	235	37,684	13,592,445	361

to Europe where they visited the automobile shows and met Reo distributors.

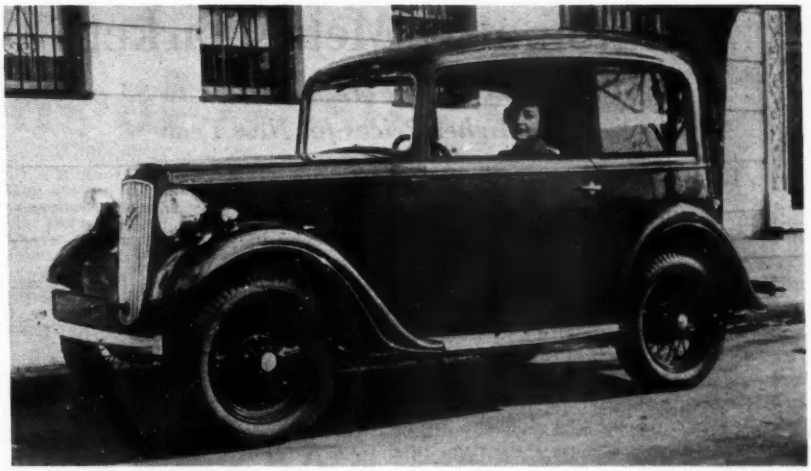
ARCH WARNER, who was for many years engineer and sales manager of the Universal Products Co., Inc., is now Michigan district manager of the Logan Gear Co. and the Bingham Stamping & Tool Co. with offices in the New Center Building, Detroit.

Willys Prices

	1937	1936	Ch'ge
Standard coupe	$395	$395	none
Standard sedan	450	425	+25
Deluxe coupe	435	...	...
Deluxe sedan	490	445	+45

750 Clubs Join in AAA Convention at Detroit

The American Automobile Association will hold its 34th annual convention in Detroit, Nov. 20 and 21. Officials and representatives of 750 affiliated clubs in all sections of the country will take part in discussions of current problems including safety, ways and means to prevent the rise and spread of motor tax diversion, efforts for repeal of federal automotive levies and future trends of the highway building program. Thomas P. Henry of Detroit, president of the organization, will be in charge of the sessions and visiting members of the AAA will be guests of the Automobile Club of Michigan.



Wide World Photo

The British Austin 7 hp. four-passenger sedan now on sale by distributors in many U. S. cities.

:SLANTS:

LABOR VACUUM—*Shortage of skilled labor is a normal development, rather than an alarming new problem now before American industry, John W. O'Leary, president of the Machinery Institute, declared this week. "We face this shortage of men with specialized skills after every depression," he said, "and the need of finding suitable men to train for skilled jobs is constantly with us as long as business is normal." Mr. O'Leary said that machinery manufacturers have taken on hundreds of apprentices in the last few months to train them for skilled jobs now available and for the jobs that are becoming increasingly numerous.*

FISHER SOUVENIR—*More than 6000 attractive, copper-plated ash trays were given as Fisher Body souvenirs to those who attended the preview of General Motors' show at the Waldorf-Astoria, Nov. 10. The trays bore the GM slogan, "Who serves progress serves America," and a scene in bas-relief showing a modern car sweeping over the crest of a hill. They were made by the Ternstedt manufacturing division of the corporation, makers of the hardware going into Fisher bodies.*

FEWER HORSES—*A further decline in the number of horses and mules on farms during 1937, and for several years to come, was forecast this week by the Bureau of Agricultural Economics, which expects the low point in the downtrend to be reached in four or five years. "As the number of horses and mules continues to decline, a further switching from the use of horses to the use of tractors is to be expected," the report says.*

Willys Show Luncheon

Canaday Says Looks and Room Added to Economy

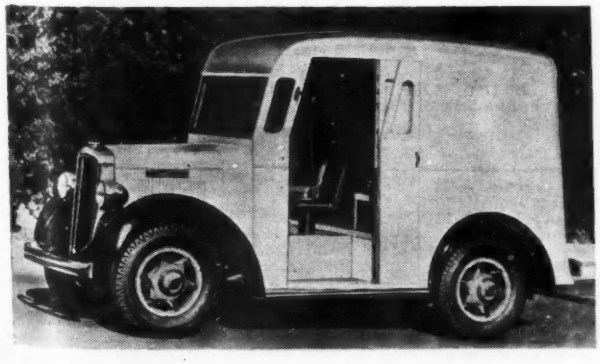
In tune with the high pitch of interest everywhere in evidence at show time, more than 300 dealers and guests claimed every available seat at the Willy-Overland luncheon which was held Nov. 11 at the Hotel Commodore in New York.

Ward M. Canaday, chairman of the board, gave a verbal picture of the financial background of Willys-Overland, pointing out that the company, with the revitalizing sustenance of $3,500,000 in new cash, has been able to rebuild completely its financial structure.

Explaining the reason for the radical design departure of the 1937 Willys, Mr. Canaday said, "The previous car only had the quality of economy to recommend it. We felt that if we could add looks and room to that car that we could go somewhere."

Francis H. Fenn, assistant to the president, estimated, at the outset of his address, that the new Willys will be delivered close to $100 under its nearest competitor. Emphasizing a point made by the previous speaker to the effect that the economy factor of their new product had a definite appeal to the public inasmuch as 90 per cent of the working people of the United States make less than $150 per month, he advised in his parting shot to the dealers: "Get down into the market where you belong."

The final speaker, David R. Wilson, president of the company, said that if Willys builds 70,000 cars, the company will make money, and added that approximately 52,000 orders had been received up to two weeks ago.



Federal Model 9 with 105 in. wheelbase has a 30-case milk delivery body.

Yellow Truck Stock Offered

The stockholders of Yellow Truck & Coach Manufacturing Co. have authorized the sale of 900,000 shares of additional Class B stock to the present common and B stockholders. The corporation has made application to the Securities and Exchange Commission for the registration of the said 900,000 shares of additional Class B stock.

Motor Wheel Extra

The board of directors of the Motor Wheel Corp. has announced an increase in the quarterly dividend rate from 25 cents to 40 cents, payable Dec. 10 to stockholders of record Nov. 20.

Automotive Metal Markets

Steel Wage Increases Foreshadow $1 to $3 per Ton Higher Prices for New Year

By William Crawford Hirsch

The steel market has for weeks been prepared for announcement of wage increases as the signal for price advances all along the line. News of higher wage scales in the steel mills was, therefore, accepted as definite notice that higher prices were just around the corner. Predictions ranged all the way from $1 to $3 a ton.

There were those who thought higher prices would not become effective until booking of first quarter 1937 business got under way; others expressed the opinion that advances might possibly become effective immediately upon announcement. The general impression in the market, however, was that all legitimate fourth-quarter business would be billed at old prices, but that the bars would be raised against buying for stocking against first quarter needs.

Compared with prices on the eve of the election, purchasing agents were confronted by some startling advances in non-ferrous metals this week. Copper, quoted up to the close of business last Friday at 10 cents, was rather tight at 10½ cents early this week. Straits tin, thought too high when it was offered at 45.85 cents on the day before election, was quoted at 53½ cents at the beginning of this week, denoting a jump of 10 cents per pound in a fortnight. Lead was up $4 a ton over a week ago and zinc $2 a ton.

With advances so definitely overhanging the steel market, it was only natural that quite a few consumers sought to place additional orders at old prices. A considerable part of this tonnage was accepted by mills, but sellers are becoming more and more cautious, their aim being not to book any fourth-quarter business that cannot be shipped before the end of the year. Demand for flat rolled steels, both sheets and strip, continues heavy. Alloy steel bars continue to come in for consistent buying by automotive consumers.

Pig Iron—A marked increase in shipments to automotive foundries is noted. Books for the first quarter will open Dec. 1. So far the $1 advance announced by a New England producer has had no effect on Middle West markets, but an advance for the first quarter is generally looked for.

Aluminum—Steady and unchanged.

Copper—Speculators in London are blamed for the advance in the price of copper which is now quoted at 10½ cents. Foreign consumption is undoubtedly running high. Coupled with the announcement of the advance here was notice that former options which permitted customers 48 hours in which to cover at the old price, had been discontinued. Copper and brass products were immediately advanced ⅜ to ¾ cents a pound.

Tin—American consumers and brokers in the New York market are up in arms against the bullish propaganda that is being disseminated by London tin speculators and which resulted in the most spectacular advances in recent years. The week's opening price for Spot Straits tin was 53½ cents. A month ago the market was easy at 45 cents. Opposition to the rigging of the market took the form late last week of American buyers offering to sell tin back to foreign dealers. Market veterans consider the market the most artificial in years and advise every one to refrain from supporting it at present prices.

Lead—Good demand is noted at an advance that makes the New York price 5 to 5.15 cents. The average price in the last ten years was 5.30 cents so that the prevailing quotation is not abnormal.

Zinc—Brisk demand resulted in a $2 per ton advance.

AMA Sales 215,554

October Total Rises Sharply Due to New Model Production

Under the stimulus of production on 1937 models, factory shipments by members of the Automobile Manufacturers Association during October jumped 262 per cent above the preceding month, the preliminary report released by the association disclosed.

October factory sales for the group amounted to 215,554 cars and trucks. This was also 4 per cent above the corresponding period last year and 128 per cent above the five-year average for October.

On the basis of this report, members of the association have shipped 2,780,633 units during the first ten months of the current year—an increase of 24 per cent over the corresponding period last year and 76 per cent above the five-year average for the period.

The report, which covers the operations of all but one of the major producers of motor vehicles in the United States, is summarized below:

October, 1936	215,554
September, 1936	59,476
October, 1935	206,612
10 months, 1936	2,780,633
10 months, 1935	2,237,509

Cameron Pump Div. of Ingersoll-Rand Co., New York, has just issued Bulletin No. 7066 which covers its line of **coupled pumps.***

A new binder, No. 2100, issued by the Link-Belt Co., Philadelphia, contains catalogs with description, application, engineering data and list prices on all seven **Link-Belt positive drives.**

The Temperature Research Foundation of Kelvinator Corp., New York, has prepared an interesting brochure entitled **"Lord Kelvin, Master of Heat and Cold."***

A booklet to assist the users of **aluminum** in solving their finishing problems has been prepared by the Aluminum Co. of America, Pittsburgh*

*Available through AUTOMOTIVE INDUSTRIES.

Calendar of Coming Events

SHOWS

9th International Automobile Salon, Milan, Italy ..... November
National Automobile Show, Grand Central Palace, New York ..... Nov. 11-18
Omaha Automobile Show ..... Nov. 11-15
Philadelphia Automobile Show .. Nov. 12-19
Scottish Motor Show, Glasgow .. Nov. 13-21
International Aviation Show, Paris, France ..... Nov. 13-29
Columbus Automobile Show ..... Nov. 14-20
Boston Automobile Show ..... Nov. 14-21
Buffalo Automobile Show ..... Nov. 14-21
Chicago Automobile Show ..... Nov. 14-21
Detroit Automobile Show ..... Nov. 14-21
New Haven Automobile Show ... Nov. 14-21
Indianapolis Automobile Show ... Nov. 14-21
San Francisco Automobile Show .. Nov. 14-21
Washington, D. C., Automobile Show, Nov. 14-21
Cincinnati Automobile Show .... Nov. 15-21
St. Louis Automobile Show ..... Nov. 15-22
Pittsburgh Automobile Show .... Nov. 16-21
Brooklyn Automobile Show ..... Nov. 21-28
Cleveland Automobile Show ..... Nov. 21-28
Montreal Automobile Show ..... Nov. 21-28
Kansas City Automobile Show .. Nov. 21-29
Milwaukee Automobile Show ..... Nov. 21-28
Portland Automobile Show ..... Nov. 22-29
Baltimore Automobile Show. Nov 26-Dec. 5
28th Automobile Salon, Brussels, Belgium ..... Nov. 28-Dec. 9
Peoria Automobile Show .. Nov. 30-Dec. 5
Natl. Exposition of Power & Mechanical Engineering, Biennial Meeting, New York City ..... Nov. 30-Dec. 5
First International Consumers Petroleum Exposition, Convention Hall, Detroit ..... Dec. 5-13
Automotive Service Industries Joint Show, Chicago ..... Dec. 9-13
National Motor Boat Show, New York, Jan. 8-16
Illinois Automotive Ass'n, 4th Annual Show and Maintenance Exhibit, Navy Pier, Chicago ..... Apr. 24-28, 1937

CONVENTIONS AND MEETINGS

International Day, National Automobile Show, New York ..... Nov. 16
National Foreign Trade Convention, Chicago ..... Nov. 18-20
16th Annual Meeting, Highway Research Board of the National Research Council, Washington, D. C. .. Nov. 18-20
International Acetylene Assn., 37th Annual Convention, St. Louis, Nov. 18-20
Natl. Industrial Traffic League, Annual Meeting, New York City .... Nov. 19-20
Trailer Coach Manufacturers Association, Annual Convention, Chicago, Nov. 19-20
Tin Can Tourists' Get-Together Meeting, Lake City, Fla. ..... Nov. 22-28
American Society of Mechanical Engineers, Annual Meeting, New York, Nov. 30-Dec. 1
National Standard Parts Association, Annual Convention, Detroit ... Dec. 7-8
Tin Can Tourists' Homecoming, Arcadia, Fla. .... Dec. 28, 1936-Jan. 3, 1937
S.A.E. Annual Meeting, Detroit, Mich., Jan. 11-15, 1937
Tin Can Tourists' Winter Convention, Clearwater, Fla. ..... Jan. 29-Feb. 8, 1937
Tin Can Tourists' Winter Convention, Sarasota, Fla. ..... Feb. 8-14, 1937
International Association for Testing Materials, Second International Congress, London, England, April 19-24, 1937
41st Annual Convention and Exposition of the American Foundrymen's Association, Milwaukee, beginning May 2, 1937

The Horizons of Business

By Joseph Stagg Lawrence

Ahead of Business

THE American nation has again performed its regular quadrennial political miracle. Forty-six million voters have gone to the polls and expressed their views on two rival candidates and two conflicting theories of government. In spite of the intensity and the extraordinary passion aroused by this campaign the verdict has been derived peacefully. It is the manner of that verdict and the extraordinary sportsmanship with which it is accepted by the millions of disappointed voters that constitutes the political miracle. With any other but a basic Anglo-Saxon temperament the orderly resolution of a great issue would be impossible. Whatever diagnosis has revealed in the New Deal and its leader the election leaves no doubt that the American people want both for another four years. It is up to those of us who do not approve that decision to be good sports, accept the decision gracefully and play ball in the traditional American manner.

As the dust of battle settles the nation takes stock. It notes distances traversed, present position and future goals.

Economic Issues Ruled the Campaign

It is a trite observation that recent political campaigns have dealt increasingly with issues which are economic. The problems which material livelihood entail have provoked first the interest and then the active intercession of the state. How much recovery the country has had during the past four years and who deserves the credit for it played an important part in the campaign which just closed. In fact, one of the candidates based his plea successfully on a claim for all the improvement in business which had taken place during his period of office. Since this discussion is in the nature of a navigator's shot at the sun and not an examination of the forces which give us periods of time and seasons of the year it will deal largely with what the student would call "objective data."

Ground Gained Since 1932

The best known measure of industrial production is computed by the Board of Governors of the Federal Reserve System. Using average production for a three year period, 1923-1925, as 100, it expresses all subsequent volume as percentages of that base period. In terms of this barometer the trough of the great depression occurred in 1932 at which time industrial production was 64 per cent of the '23-'25 average. In the interval four-fifths of the ground lost during the depression has been recovered. From this point it is necessary to make a further recovery of only 11 per cent when we will be back at 1929 levels.

Has Cyclical Recovery Been Exhausted?

It is possible to look at these figures and hold, as some competent students do, that the greater part of the cyclical business rebound has already taken place and that from this point on little further sound improvement may be expected, that any expansion in production beyond the small fraction indicated will be excessive and will serve but to create conditions out of which the next great depression will be born. Such a view is unduly pessimistic.

An Important Growth Factor

Our country according to every significant gage is still a growing country. Its population is now 5.2 per cent greater than in 1929 and 20 per cent greater than at the peak of the previous cycle in 1920. Furthermore, this population is undergoing a little comprehended change in composition. The proportion of mature adults to the total population is increasing. The census of 1930 reports 25 per cent of the population 45 years of age and over. Two generations earlier the census of 1890 reported 17 per cent in that age group. What effect such changes may have on the character and volume of consumption it is difficult to say, and in any event qualifies for separate treatment.

Growth Plus Cyclical Recovery

We do know within reasonable limits how growth affects the demand for industrial products and therefore industrial production. Again using the Federal Reserve index of industrial production, we find that it stood at 87 for the peak year of 1920 and at 119 nine years later in 1929. This suggests an annual rate of growth for industrial production of approximately 4 per cent, a figure which agrees roughly with much more careful studies of industrial growth made by other students. If we allow for such a growth for the ten year period following 1929 we arrive at a volume of industrial production in 1939 or 1940 which should be 62 per cent greater than in the base period of the index, i.e., 1923-1925. In terms of the current volume this means an improvement of 50 per cent. It suggests that business over the next four years may average an annual increase of 12.5 per cent in terms of current levels of which 4 per cent is for growth and the remaining 8.5 per cent for cyclical recovery.

On Behalf of an Imperfect Method

This is a highly conventionalized approach to the business problem and it is not at all likely the business fates will oblige us with a future course that follows the cyclical pattern so faithfully. The analysis should not be cast aside because it appears unrealistic. With all the defects of this method, which we grant without argument, the fact remains that it is the only possible approach to what the future holds unless we enter the still more dubious provinces of clairvoyance and metaphysics. Business decisions cannot be made, a course of action cannot be plotted without some estimate of what the future holds. If probable defects of the appraisal cause its rejection

(*Turn to page 697, please*)

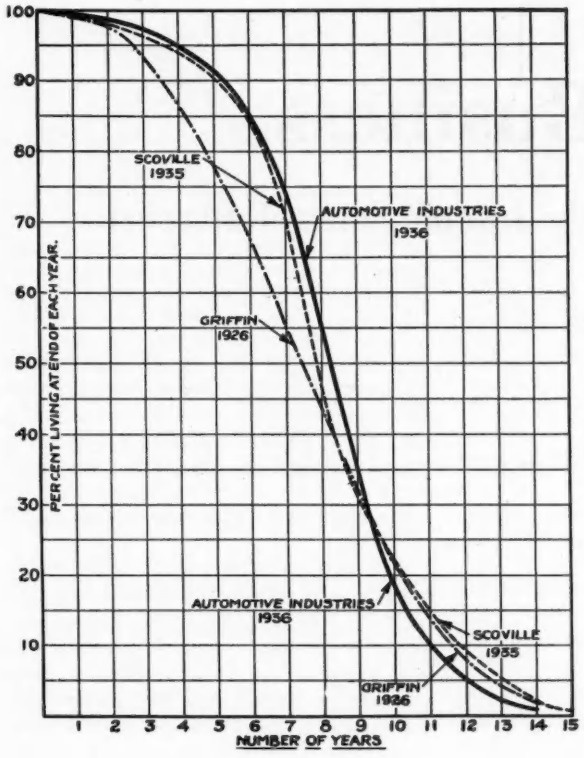


Fig. 1
Per cent of automobiles surviving

More Than ... Service Are ...

By Marcus Ainsworth* and Ludlow Clayden†

IN presenting its first report in November, 1935, the Automotive Survey Committee of the American Petroleum Institute included an analysis of the passenger cars in use, broken down, as to the number of cars by year of manufacture and by make of car. So much interest was shown in this analysis that the present authors have considered it worth while to make a more thorough study of the problem.

Total passenger-car registrations are composed of cars that go into service each year throughout the United States. These registrations are naturally made up of new and used cars, but for an analysis of these registrations it is necessary to use a count of the new cars that have gone into service each year over a period of years. The only accurate count of such cars for the country as a whole is the new-car registrations as compiled by R. L. Polk & Co. of Detroit. These data form the nucleus of our estimate of cars in use, and cover the period of time from 1922 to 1935 inclusive. In the committee report of last year, an effort was made to use the production figures of the various car manufacturers; but this complicated matters, as the production figures included exports, on which complete data are lacking. In the case of some manufacturers, exports will run as high as 15 per cent of total production.

In order to calculate the number of cars in use at any given date from the total of new cars that have gone into service over a period of time, it is necessary to apply some formula as to the rate at which motor vehicles go out of service. This is generally known as the "mortality" curve, and the resultant curve of those which remain in use as the "survival" or "life" curve. Such a curve was adopted for use in this study, and is based on two other similar curves which have been in frequent use during the past few years. As far as is

* Automotive Industries, Philadelphia, Pa.
† Sun Oil Co., Philadelphia, Pa.

APPENDIX "A"

Number of Automobiles Surviving ...

Year of Manufacture	Per Cent Surviving	Auburn	Buick	Cadillac	Chevrolet	Chrysler	De Soto	Dodge	Durant	Ford	Franklin	Graham	Hudson	Hupmobile
1935	99.5	5,137	87,197	6,659	653,415	40,333	26,817	177,876	.....	822,386	.....	15,885	21,479	7,413
1934	98.7	5,464	62,247	4,835	527,952	27,687	11,298	88,967	.....	523,631	355	12,719	19,056	6,481
1933	97.5	4,912	42,714	3,805	462,631	27,960	20,728	83,910	.....	303,335	1,296	9,875	2,872	6,558
1932	95.1	11,075	47,272	5,962	307,040	24,741	24,071	26,734	1,079	246,240	1,739	12,228	8,218	10,265
1931	92.0	27,173	83,603	10,245	536,755	48,438	26,156	48,843	6,651	486,295	3,571	17,672	17,654	16,033
1930	85.0	9,580	104,258	10,266	526,051	51,772	29,977	54,489	18,224	896,832	6,360	25,619	25,896	20,661
1929	75.0	13,388	129,230	11,202	585,008	63,388	44,710	86,830	35,786	982,601	8,028	45,365	47,019	33,253
1928	55.0	6,134	107,630	9,973	422,327	77,990	7,990	81,698	39,195	264,739	4,083	32,128	26,571	30,493
1927	34.5	3,393	80,188	6,468	223,494	53,211	.....	42,752	19,589	135,731	2,596	6,413	19,892	11,664
1926	19.0	1,352	43,623	4,700	93,832	24,694	.....	42,442	17,441	225,911	1,363	5,776	13,052	7,196
1925	10.0	560	20,857	2,280	46,650	10,746	.....	20,925	454	160,326	950	381	10,984	3,729
1924	5.0	130	8,350	896	14,775	1,572	.....	9,716	377	81,382	305	343	2,972	1,550
1923	2.3	92	5,021	511	10,690	1,555	.....	3,473	910	40,486	229	94	1,072	881
1922	1.0	24	1,385	220	2,404	548	.....	1,420	551	11,559	81	93	282	342
Total in use, December 31, 1935		88,414	823,575	78,022	4,413,024	454,635	191,747	770,075	140,257	5,181,454	30,956	184,591	217,019	156,519

Half of the Automobiles in

of Two Makes

known to us, the first of such tables of mortality rate was compiled by Professor Griffin of Michigan University in 1926. This work was done by making a thorough analysis of the registrations of the state of Michigan. By use of the Griffin data a very close estimate of cars in use by make and year of manufacture could be computed up to about 1930 or 1931. However, during the past six years registrations have not followed their normal course, due to the economic conditions throughout the country. Cars were put into storage for many years and then brought out again for use; others were forced to operate long after the normal life of the car; and many others were operating on the highways without any official record of their registration. These conditions made the Griffin curve inadequate for present-day requirements.

In 1935 John Scoville, chief statistician for Chrysler Corporation, in an address delivered before the Econometric Society, showed a curve which seemed to fit our needs much better than the Griffin. This life curve, with a few minor changes, was used in the

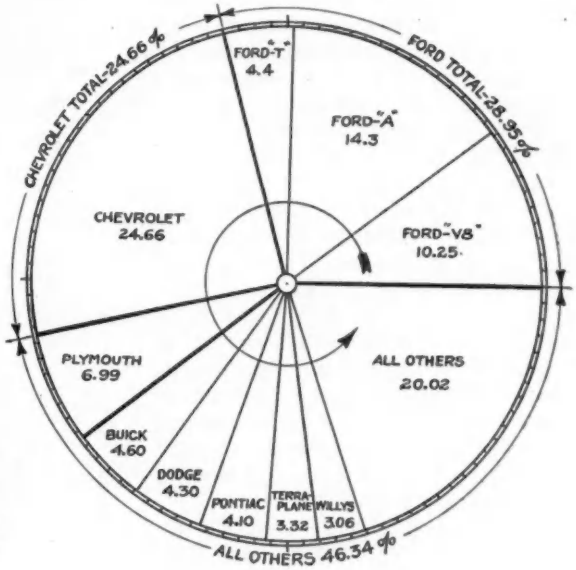


Fig. 2 Number and percentage of total cars in use by makes (as of December 31, 1935).

Make	Number Surviving	Per Cent of Total	Make	Number Surviving	Per Cent of Total
Ford	5,181,454	28.95	Graham	184,591	1.03
Chevrolet	4,413,024	24.66	Packard	180,212	1.01
Plymouth	1,250,817	6.99	Hupmobile	156,519	0.87
Buick	823,575	4.60	Durant	140,257	0.78
Dodge	770,075	4.30	Auburn	88,414	0.49
Pontiac	734,374	4.10	Cadillac	78,022	0.44
Terraplane-Essex	593,545	3.32	LaSalle	69,328	0.39
Willys-Overland	546,975	3.06	Reo	67,695	0.38
Oldsmobile	507,115	2.83	Franklin	30,956	0.17
Chrysler	454,635	2.54	Pierce-Arrow	30,463	0.17
Studebaker	411,077	2.30	Lincoln	29,405	0.16
Nash	357,220	2.00	Miscellaneous	388,102	2.18
Hudson	217,019	1.21			
De Soto	191,747	1.07	Total	17,896,616	100.00

on December 31, 1935, by Makes

La Salle	Lincoln	Nash	Olds-mobile	Packard	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Terraplane-Essex	Willys-Whippet-W.K.	Year of Manufacture	Per Cent Surviving
11,716	2,358	17,650	148,628	37,465	871	381,070	139,421	3,874	39,375	53,569	10,387	1935	99.5
5,115	2,034	14,129	70,744	6,467	1,717	298,624	71,701	3,804	41,020	39,983	6,490	1934	98.7
3,616	2,059	11,069	34,413	8,854	2,098	243,425	83,214	3,532	21,146	34,935	15,275	1933	97.5
3,659	3,023	19,242	22,946	10,516	2,560	106,442	45,578	3,680	23,777	27,368	24,629	1932	95.1
6,332	3,189	36,217	43,224	14,955	4,160	86,746	67,296	6,221	42,810	39,141	47,234	1931	92.0
9,573	3,703	43,423	42,933	24,070	5,776	54,656	58,131	9,732	48,047	53,837	55,901	1930	85.0
15,217	4,613	78,860	70,112	33,475	6,290	63,727	118,704	12,989	62,129	143,498	149,782	1929	75.0
10,315	3,315	63,260	40,484	23,590	3,155	16,127	101,104	11,752	58,868	97,434	127,029	1928	55.0
3,785	2,229	37,943	16,758	10,817	2,013	.....	39,746	7,640	32,719	57,894	48,095	1927	34.5
.....	1,457	22,469	9,217	5,458	1,050	.....	9,476	1,983	17,875	24,854	27,077	1926	19.0
.....	838	8,547	4,390	3,202	555	.....	3	1,401	13,383	15,963	21,500	1925	10.0
.....	351	2,693	2,286	754	158	.....	.....	581	5,376	3,726	8,099	1924	5.0
.....	182	1,303	768	434	45	.....	.....	388	3,451	981	4,526	1923	2.3
.....	54	415	212	154	15	.....	.....	118	1,101	362	951	1922	1.0
69,328	29,405	357,220	507,115	180,212	30,463	1,250,817	734,374	67,695	411,077	593,545	546,975	Total in use, December 31, 1935	

presentation of our material. It seemed advisable to us to lower the rate of mortality of the car slightly during the first five or six years of its use and to increase it somewhat during its last declining years. The three curves are shown in Fig. 1. Unfortunately there have been no data published from which a reliable survival curve could be computed. No doubt many attempts have been made to establish these data, but the necessary analysis of registration is a tremendous undertaking involving great expense and time. The material offered in this study is largely a subjective estimate.

By the use of the AUTOMOTIVE INDUSTRIES survival curve the number of cars in use at the end of 1935 is estimated to have been about 18,000,000, as will be seen in the table with Fig. 2. By the same method the number of "junkers," or cars that went out of service, during the year amounted to about 3,000,000 units. This indicates a total registration throughout the year 1935 for the United States of 21,000,000 passenger cars.

It is, however, our opinion that no one knows exactly how many cars have been in use throughout a given period. Registration figures are not exact, as they include many duplications. The same car may be registered in more than one state. A license plate may be transferred from an old car to a new one. Many of the license plates issued by the license bureau are not sold to car owners. In several of the states light commercial vehicles are registered as passenger cars. All these various procedures tend to add to the difficulties of securing an accurate count, and make it impossible to reconcile a calculated registration with the count of registrations as published in the statistical issue of AUTOMOTIVE INDUSTRIES each year and that of the U. S. Bureau of Public Roads.

From a study of the survival curves the average car life today is estimated to be 8.40 years, as against 7.04 years computed by Professor Griffin. The average age of cars in use is estimated to be 4.71 years, as compared with 3.07 years at the end of 1924.

Table with Fig. 2 shows the total number of different makes of cars actually in use Dec. 31, 1935, while Table with Fig. 3 shows the number of cars in use, broken down into the number of cars by year of manufacture. The detailed data from which this material was derived are found in Appendix "A."

The authors freely admit that the survival curve used in these calculations and the resultant data computed by the use of this curve are subject to controversy. The study is of a quantitative rather than a qualitative basis, but it is believed that the table is a reasonably correct picture of the situation at the end of 1935—at least for any purpose for which the data may be used.

It was pointed out in the 1935 committee report that practically no cars were being manufactured requiring less than a 68- to 70-octane fuel, and that the proportion requiring more than 70 octane was very small. An analysis made on the basis of figures available at the end of 1936 will show a very considerable increase in the 70-octane class.

In the committee report some figures were also given on the rise in demand for extreme-pressure lubricants. Refiguring for the years 1930 to 1934 inclusive on the basis of the new total estimates and adding the year 1935 shows the following:

Cars in Use Bearing E.-P.-Lubricant Recommendations

Year	Number
1930	48,560
1931	62,321
1932	53,658
1933	33,491
1934	570,608
1935	1,210,137
Total	1,978,775

This represents 11 per cent of the cars in use and, of course, indicates the beginning of a very rapid rise. At the end of 1937, if we have as good an automobile year as is now anticipated, the curve will become quite steep.

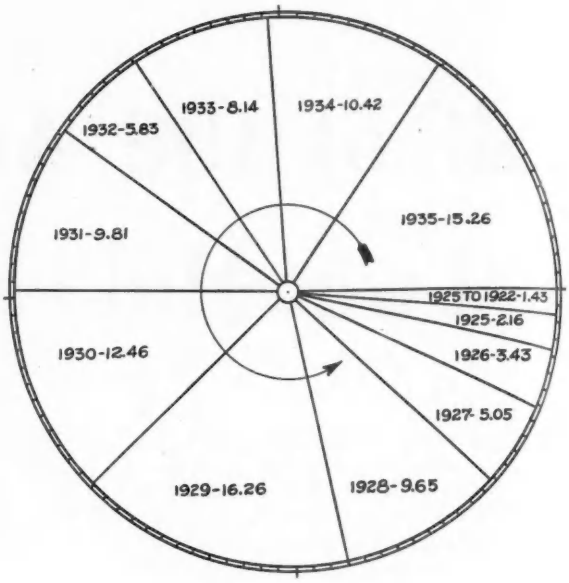


Fig. 3

Number and Percentage of Total Cars in Use — by Years of Manufacture

(As of December 31, 1935)

Year of Manufacture	Per Cent Surviving	New Registrations	Number Surviving	Per Cent of Total
1935	99.5	2,743,908	2,730,188	15.26
1934	98.7	1,888,557	1,864,006	10.42
1933	97.5	1,493,794	1,456,449	8.14
1932	95.1	1,096,399	1,042,675	5.83
1931	92.0	1,908,141	1,755,490	9.81
1930	85.0	2,625,979	2,230,082	12.46
1929	75.0	3,880,206	2,910,154	16.26
1928	55.0	3,139,579	1,726,768	9.65
1927	34.5	2,623,538	905,120	5.05
1926	19.0	3,228,401	613,396	3.43
1925	10.0	3,870,744	387,074	2.16
1924	5.0	3,303,646	165,182	0.92
1923	2.3	3,753,945	86,341	0.48
1922	1.0	2,369,089	23,691	0.13
Total surviving			17,896,616	100.00

Mexican Gas Tax Reaches New High

Expansion of the highway network and consequent increase in the use of motor vehicles are cited by the Ministry of Finance of Mexico as the chief reasons for the record yield to the Federal government of 16,066,071 pesos during the first half of this year from the gasoline consumption tax. Revenue from this source was 11,897,153.41 pesos during the corresponding period of 1935. The Federal and state governments share proceeds of this income on a pro-rata basis. Most of this money is spent for building roads and reconditioning and conserving existing highways.

Doctors Link Management and Men

with close contacts that foster good-feeling and cooperation

By C. D. Selby,* M.D., F.A.C.S.

MEDICAL service in General Motors Corporation is a function of personnel management. As such, it is expected to make substantial contributions to both the employee group and management by holding down lost time and building up goodwill without, however, infringing upon the rights of physicians in private practice.

Because of their specialized knowledge, plant physicians are left somewhat to their own devices in fitting themselves into plant organizations. They have to sell themselves to management and workmen alike. They must not over-sell to either. If they do, they raise the level of medical service above that justified as good business practice and at the same time are apt to wander into the field which properly belongs to private practice.

The doctors are expected to sell themselves to management by the use of good judgment, knowledge of plant conditions, the confidence workmen have in them and their professional skill. They may sell themselves to the workmen by their ability as physicians, their familiarity with conditions out in the plants, their personal relations with the workmen and the respect they get from physicians in private practice, their medical societies, etc. In establishing themselves they have the same problems as physicians in private practice. They must treat their patients with the same consideration and professional thoroughness.

Doctors have made themselves valuable to industry. They came originally to treat injuries. They increased their usefulness by giving temporary care for trivial ailments and emergency sickness and by helping applicants to obtain employment suitable to their physical conditions.

Now that plant doctors are venturing further into the field of preventive medicine, the following program has been designed for their guidance. It is based upon the theory that to maintain health, conditions which may cause disease must be located and controlled, suitable workmen must be employed and they must receive appropriate medical supervision. At present emphasis is on the control of exposures but medical supervision is equally important.

It should be noted that the term "exposures" has been substituted for "hazards" as being more appropriate to the progress in furnishing healthy working conditions.

1. LOCATION OF EXPOSURES:

This is a function of chemical engineering, sometimes called industrial hygiene engineering. The purpose is to locate all possible sources of disease, ascertain their nature and determine their extent. Some units have chemical engineering services of their own. For those who do not the Department of Industrial Relations of the Central Office is prepared to furnish it.

Surveys are made with the assistance of the plant physician and the findings are used by them as a basis for physical supervision.

2. CONTROL OF EXPOSURES:

Exposures are usually in the form of dusts, fumes, mists, vapors and gases. Control is obtained preferably by changes in process or substitutions where possible. If such are not possible, air contaminants are removed through exhaust ventilation, supplemented by respiratory protective devices if necessary. This is not a medical function, but when plant physicians have determined that conditions are such as may cause disease their recommendations are given appropriate consideration.

(*Turn to page 691, please*)

*Medical consultant, General Motors Corp. Part of a paper presented at a meeting of the American Association of Industrial Physicians and Surgeons, Oct. 8, 1936. Reprinted from *Industrial Medicine*.

House Trailers—

By Philip H. Smith

IF there is any man living who can appraise the immediate future of the tourist trailer industry with certainty, let him step forward. Behind every forecast made thus far lurks a glittering question mark. Is it a boast or a promise? Ask manufacturers and the public, when the pronouncements get into print.

Yet here is an industry, fueled generously with public interest, with such a big head of steam that attention to safety valves is warranted. Is the track clear ahead and for how great a distance in time? There must be some obstacles on which to cock a weather eye.

On the immediate front there is the matter of legislation. A little beyond is the question of sustained public interest. Neither lends itself to absolute findings, but there are related facts which must be considered sooner or later and the sooner the better for wholesome progress.

Thus far there has been practically no legislative restriction on trailer use, and this, in spite of the great attention focused upon all matters affecting the highways. Registration is required in most states, but the fees are not prohibitive. In eight states there is no charge; in 20 the fee is $5 or less, and unless weights rise well over one ton the fee holds close to $10 elsewhere. In 28 states there is no personal property tax on trailers, so that ownership and use are still unhampered.

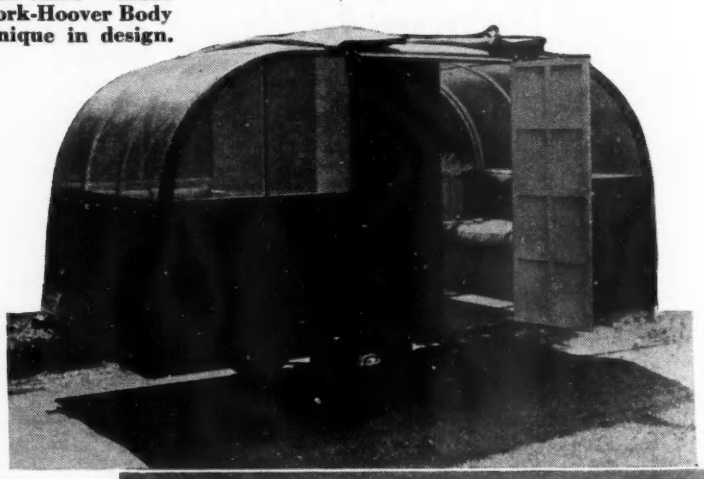
Nor is the equipment of trailers supervised to any great extent. Ten states stipulate brakes when gross weight is 1500 lb. or more, but only 11 states have expressed enough concern over couplings to prescribe safety chains or safety hitches. Still fewer make examination of equipment.

This happy state cannot last. It doesn't require a seer to see it. It merely comes to light when highway officials are interrogated. An expansion in trailer use will bring with it special regulation because the majority of officials have already expressed themselves as foreseeing the need. In the offing is state regulation covering trailer brakes and lights, while certain states will pass ordinances covering measures for sanitation. States may regulate parking on state highways, otherwise the regulation of arteries will be left to local ordinances.

As an example of official attitude toward safety legislation, the following statement from an Atlantic Seaboard state will suffice:

"Trailers weighing over 1500 lb. should be equipped with power brakes. Inspection should be made of trailers, the same as other vehicles. They should be equipped with mirrors for rear vision; also safety glass, safety chains to be attached to each side of the vehicle drawing the trailer, and they should have a steel frame. They should also have clearance lights, and

The "Sun-Chasr" made by the York-Hoover Body Co. is unique in design.



This DeLuxe model of the Covered Wagon line for 1937 is 17 ft. 2 in. long and of steel construction.

Where do they go from here?

This contribution to tourists is a French overnight tent that can be rolled and packed on the top of the car. The frame in front serves as a ladder. The front flap has zippers at each side.

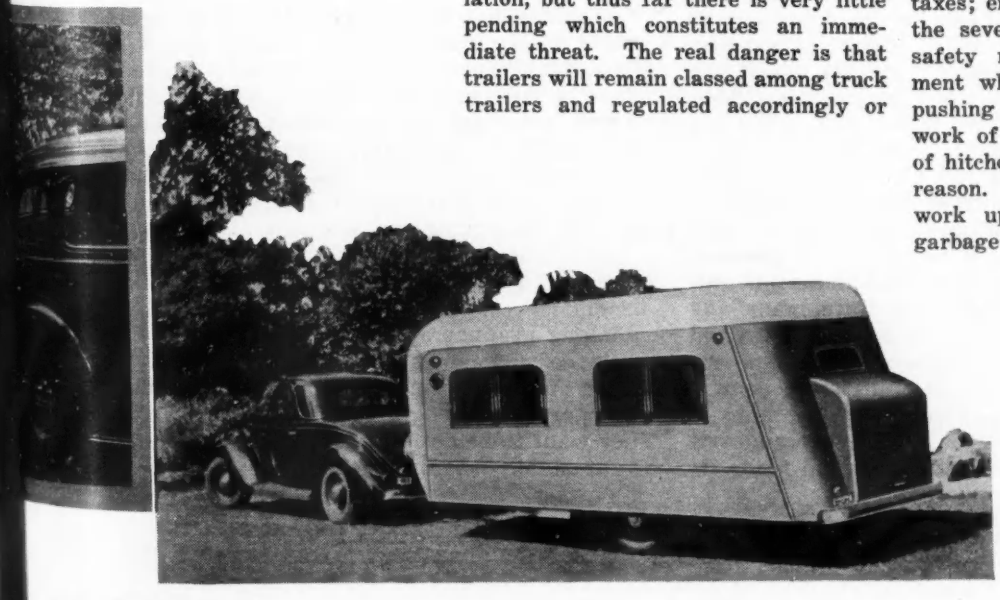
at least one window should be open in case of emergency."

The problem of sanitation has not yet become serious enough to arouse official concern, but authorities vision a problem with greater use of trailers. The solution suggested by one official is to "require tourists to use designated camping grounds where sanitation facilities are available." In similar vein another authority says: "Tourist trailers park everywhere, throwing tin cans and garbage all around. The solution, as I see it at present, will be a control of all spaces provided for their use, similar to that now regulating cottage camping."

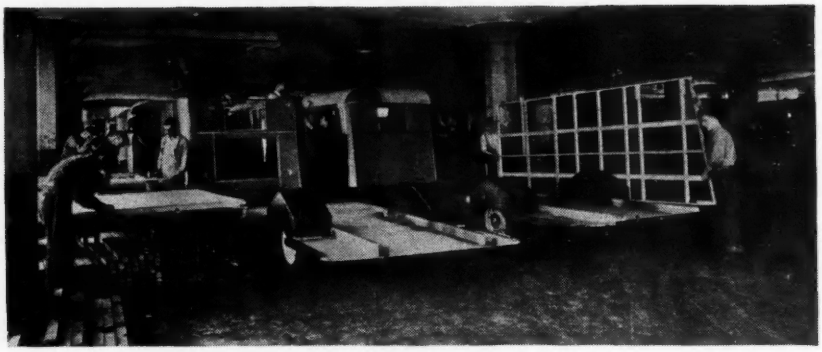
Now control and restriction are not pleasant, particularly when applied to a tourist trailer where the lure is so obviously one of complete irresponsibility. Go anywhere, stop anywhere, escape taxes and rent—this is irresistible. Nothing but death has ever before offered so much in a single package. But in all reasonableness it cannot last. Property owners resent indiscriminate parking and charges will be instituted in place of rent. Tax dodging is a short-lived game. The house on wheels is a shining target for taxation, a formidable object to be involved in an accident and therefore a good topic for the news, and it possesses singular capacity for irritating the non-trailing public when handled without consideration.

We are going to hear a great deal about the menace of restrictive legislation, but thus far there is very little pending which constitutes an immediate threat. The real danger is that trailers will remain classed among truck trailers and regulated accordingly or that the industry will be indifferent to highway needs and fail to cooperate with the proper authorities while legislation is in its formative stage. It should be noted that motor vehicle administrators see the need of regulation as arising wholly from growth in trailer use; in short, trailer progress will create its own problems and the industry will be quite as able as officials to see the problem developing.

A united front can do much to stem the imposition of excessive or punitive taxes; engineering genius can mitigate the severity of legislation applied to safety measures by devising equipment which anticipates needs and by pushing it for standard adoption. The work of the S.A.E. on standardization of hitches is to be commended for this reason. There is also opportunity to work upon problems of sewage and garbage disposal. Indifference to this



The Aladdin "Zephyr Four" is 20 ft. overall and is built upon a steel chassis.



View of Silver Dome bodies under construction

problem may justifiably lead to harsh laws when and if trailers come into wider use.

There are many commentators who believe that trailers will restrict their own mobility as they multiply. They hold that the sport appeal is limited and will become increasingly so with numbers. So they declare that the future of the trailer lies in its possibilities as a home. Presumably Roger Babson had some such reasoning in mind when he forecast that half the U. S. A. would be living in trailers in twenty years. Certainly William B. Stout is of the trailer-home mind, and he is not lacking for company.

Trailers are being used as year around homes now, and it would be rash to predict that such use will not increase. To do so might easily class one with the wise boys of thirty years ago who said, "Get a horse." The fact

PRODUCTION

OUTPUT of tourist trailers in 1936 will aggregate 35,000. Next year the production figure will soar to 70,000 and possibly it will reach 80,000.

Production estimates being bandied around today have very little relation to fact and are deplored by the soundest elements in the industry. Headlines are expressing hopes and wishes. This is true whether the estimates refer to the output by individual concerns or to totals for the industry. There is an inclination, freely indulged, to multiply all known figures by two and sometimes four.

The estimate of 35,000 has been reached through a critical analysis of manufacturers' claims; by a visual examination of existing production facilities and a general behind-the-scenes survey. The estimate of 70,000 for 1937 is based upon a similar study with due consideration being paid to expansion under way and projected.

It is estimated roughly that there are now 700 trailer manufacturers. This number has no great bearing on production possibilities for 1937. Many among this number do only custom work, others are producing trailers as a side-line and not a few are building intermittently or as a hobby. If the truth were known, a full 80 per cent of this vast array of manufacturers would exceed their fondest hopes if they averaged 50 trailers in the year. The figure of 700 is not likely to increase because there is already some mortality and for every newcomer there will be a graceful retirement.

Manufacturers are planning to double and triple output this year, but very few of them have made any preparation to do so. Even if the goal were attained quite generally it would not lift production anywhere near the touted 200,000 because they all start from a base far below what is generally thought to be fact.

Some well-established concerns have recently moved to larger quarters, others are looking around for suitable factory space. Where such definite moves have been made toward acquiring better facilities there has been an accompanying effort to get some degree of straight line assembly and departmentalization of operations. Still, the number of concerns which are equipped to exceed a trailer-a-day output can be counted on fingers and toes. Manufacture is still a craft enterprise with spotty application of mass-production technique, and the gains in output for 1937, as far as the majority of individual manufacturers is concerned, will come from achieving greater efficiency within present limited quarters.

There is talk of customers being turned away at the door. This is fact. But there is no case on record where a potential customer was unable to purchase a trailer from somebody if he really wanted it quickly. One concern's loss was another's gain. There is no seller's market in the true sense, nor is there any evidence that there is going to be one in 1937.

It should not be forgotten that time is an essential factor in development and organization. The trailer industry is an infant and cannot mature overnight. There are other factors, as well, which militate against sudden mass production. These are: disinclination to throw in large amounts of capital while the future of trailer use remains problematical; doubt that problems of design and material have been solved sufficiently to warrant large-scale operation and, finally, necessity for establishing adequate dealer representation, because, contrary to current belief, trailers must be merchandised.

Among producers longest established there is doubt as to the wisdom of quickening the pace substantially before more experimental work has been done and before more basic engineering studies have been made. They want to be certain which they are making—house or automobile—before they swing into full stride.

Silver Dome production line with bodies ready for interior equipment.

that radical departures often come from outside an industry leads one to believe that a contribution to home building may come from people who are ignorant of the limitations in home construction.

The proponents of trailer-homes believe that the number of people who can afford a trailer as a vacation implement is very limited and that greater use must be had to justify the tying up of so much capital however obtained. The justification, they say, lies in twelve months' use, otherwise trailer sales must expand via the rental system. Opponents of the home idea, among whom are many architects and builders, claim that the only advantage to be had is mobility and that it is obtained at great sacrifice owing to space limitations. They declare that the problem of home ownership is really a problem of land and not of construc-

MERCHANDISING

WHO is going to sell the output of trailer factories? That's what the trailer manufacturer would like to know.

With the problem forced upon him prematurely, because of the flare-up in consumer interest, and with hardly any experience to go on, he is feeling his way and destiny will play a major part in shaping his distribution end.

There is, however, a very definite drift in the thinking about the merchandising problem. This has been revealed by interviews with manufacturers whose production has gone beyond the "manufacturer-to-you" stage. Seventy-one per cent have gone on record that the automobile dealer is not the best outlet and this approaches a unanimity which is a little surprising in view of widespread printed comment to the contrary.

If there is any single reason for fighting shy of the automobile dealer it is apprehension lest divided loyalty and effort impair his value. In a number of instances this thought is based on more than a hunch. Where franchises have been given both to men trained in specialty selling and to automobile dealers, the former have done a better merchandising job.

Arguments in favor of the automobile dealer can be grouped under the heading "Expediency." A quicker job of getting a retail distribution organization can be done because of the ready-made sales staff, showrooms, and in some instances, availability of capital and financing facilities. If a similar ready-to-shoot equipment could be found apart from the automobile business it would likely be chosen in preference.

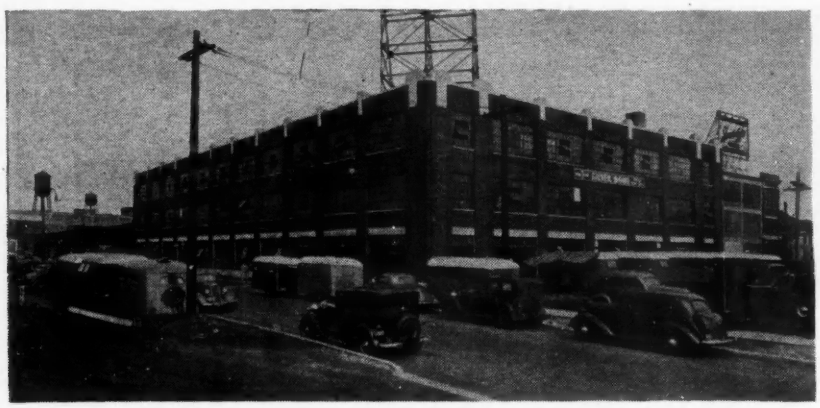
Another argument in favor of the automobile dealer, again a matter of expediency, is their eagerness to take on a line. Dealers cry for trailers and it exerts great pressure. This has caused some motor car manufacturers to ponder alliances with trailer producers. It has stirred others, it is rumored, to warn their dealers to stick to their knitting.

Here is a composite statement of viewpoint as expressed by trailer manufacturers:

"The trailer isn't like an automobile. It isn't standardized and it may never be. About 85 per cent of sales are made through women and they are as particular about the style and arrangement of fittings as they would be in choosing a home. This hinders the adoption of automobile practice, order-taking and crossroads selling. Distribution methods depend a great deal upon the ultimate development of the product, that is, whether the bulk of demand is for a year around living proposition or for a vehicle for vacation and week-end use. This, in turn, depends somewhat on what develops in the way of regulation and legislation."

The practice of selling to customers at a discount and letting them become retailers is now outmoded, but it is an evil that will take time to eradicate. The practice of giving a service which covers bringing the trailer to your door, hitching and unhitching and storing it at other times, will likewise prove onerous. It may sell trailers, but unless charged for it may establish a profit drain.

This much is certain as the merchandising phase struggles to reach an equilibrium: Increased competition in 1937 is going to force representation over a larger territory. Thus manufacturers who up until now have been able to subsist comfortably on sales generated by advertising, local business, direct-by-mail and owners, are being forced to seek outlets. The automobile dealer is likely to become "it," because he has the logical set-up.



The Silver Dome plant in Detroit has kept pace with the growth of this new industry so that it is now one of the principal producers.

tion. Where homes are needed in the congested areas the trailer has no place, while in the outlying districts better housing can be obtained by orthodox means.

Allied to the idea of a trailer as a permanent home is the conception of this new vehicle as a solution to the problem of mass-housing for the low-income group of our population. Many trailer enthusiasts foresee a large market in the housing of the itinerant worker and they wonder why more experimentation has not been tried. Students of the mass-housing problem reply that mobility is not an inherent desire of the poulation which is now on the move; rather, that movement is a symptom of industrial disorganization. More stable employment, they say, would shift desire from trailers to orthodox homes.

Perhaps the students of this problem are only out of touch with reality. Perhaps the stabilization of employment isn't forthcoming. Certainly, there are many trailer manufacturers who are ready to bank their fortunes on the promise of a continued demand from wage earners. The trailer, they say, enables the worker to go where there is employment and take his family with him. They declare that far from retarding trailer growth, concentration in camps will promote it; that there is great need of high-class camps on the edge of industrial centers and that expansion of trailer sales depends heavily on their promotion. Trailer colonies are going to expand enormously, because they are a logical outcome of the recent economic unpleasantness.

The advent of trailer-homes on any large scale has enormous sociological and economic implications. Their very enormity calls for silence. We can have no idea what it would be like to have a large migratory population with no community responsibility, ties or traditions; we cannot even foresee an economic system which would make it feasible. We can guess, however, that a migratory population would be taxed and the imposition of taxes might easily penalize mobility to the point where it would be no longer the asset that it is today.

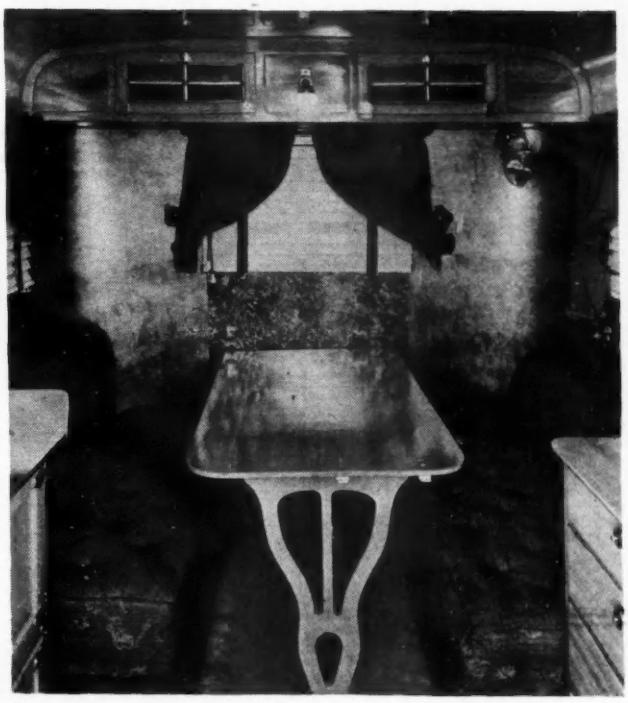
It is still much too early to appraise the public's attitude toward trailer life. The element of romance and novelty is strong and until it wears off we can have no conception of the stable values in trailer living. We don't know the extent of the rolling urge in the human being, and whether or not, once the urge is gratified, a desire to take root may return.

Whatever the course of trailer expansion, design seems destined to undergo a metamorphosis before equilibrium is reached. Proponents of prefabricated houses and producers of trailers may exchange ideas to sport a wholly new design. There may be a differentiation in products with use as the governing factor in their form. There can be trailers suitable for vacationing at reasonable, relative cost; others will have a utilitarian value for people whose occupations call for constant travel, while a third type might approximate our present idea of a home, having mobility but not perpetual motion.

Indications are for a substantially greater market for trailers for the next few years, with obstacles merely serving as a steadying influence. The real purport in bringing the obstacles forward in this discussion is to stress that an industry in its formative years is given an opportunity, not to be repeated, for cooperating with public bodies in the formulation of equitable rules and regulations, and that such cooperative endeavor is preferable to ignoring situations until effort must become one of fighting for law abatement. The forthcoming meeting of the American Association of Motor Vehicle Administrators may indicate where cooperative action is needed and for that reason is of more than passing interest.

Among the interior improvements of Covered Wagon models for the 1937 season, more convenient bedding storage, more convenient cooking and cabinet facilities and inner coil springs in the seats are prominent.

The formation of the Coach Trailer Manufacturers' Association is a step in the right direction of creating a united voice for the industry. It will be regrettable if the rush of business conceals the basic need for associated activity, or if the character of current developments leads the small manufacturer to believe that the wheelhorse work of organization is a "job for the big fellows." Group action can contribute toward holding taxation within reasonable bounds; it can encourage a scientific solution of problems which otherwise will be handled by legislative fiat; it could work profitably toward dissociating tourist trailers from truck trailers in the minds of highway officials; it can press for uniform laws, and it could achieve something by collecting and disseminating facts to offset unwholesome fancy.



The Bender house trailers are equipped for comfort as shown in this view of seats and table.

Here is the interior of the "Sun-Chasr," the outer view of which is shown on the first page of this article.

New trailer models are going to show the paradox of greater diversity and greater standardization. Not all the 1937 offerings have been revealed, but enough have been announced to indicate some trends.

In a review of about 85 models, products of some 39 makers, we find that lengths have been increased to average 17 ft. and that the average sales price is now around $700, or about $50 more than hitherto. Steel has well nigh supplanted wood for chassis. With few exceptions wood is now confined to the lightest or least expensive trailers, while a combination of wood and steel cuts a much less important figure.

Continuing with the under-carriage, we find that independent springing hasn't made much headway. The majority of manufacturers use semi-elliptic springs in conventional manner. Several concerns will feature devices for locking out the springs when parked, while others will provide means for altering road clearance at will. The towing hitch affixed to the car is still regarded as extra equipment.

The trend toward the use of metal for side walls continues and late announcements may swell the ranks. Sheet steel is being used, principally by the larger producers, and in many instances the metal is lined with a composition board. Pierce Arrow has made a distinct departure in its Travelogue by using aluminum sheets for the side walls. These are rivetted to a steel frame. Masonite and leatherette over plywood lead metal in popularity.

Steel framing has made more progress than steel for body panels. Edwards Home-mobile, for instance, is using rolled tubular steel sections of box-type design to which outer wall panels are riveted and into which inner wall panels are slipped, so that the section serves as a molding for concealing inner panel joints.

A great deal of attention has been given to insulation, both against heat and cold. Pierce sprays a sound deadening and insulating material over the inner surface of its aluminum sheet side panels, while Alma Trailer's "Silvermoon" uses a spun glass wool between exterior and interior panels, and in the roof as well. The most popular roof insulating material is cotton padding, but foil has made some gains. Aluminum paint is near standard for top finish and now it is being carried half way down the side walls to give a heat-reflecting surface. Several of the new models yet to be announced will feature some form of ventilating system for which air-conditioning properties will be claimed.

Noticeable on the new models will be brakes as standard equipment on nearly all models selling over $1,000. Toilets also will be found more frequently in this price group and so will heating stoves.

Realization that many people want more comfort is reflected in many small items. We see this in the arrangement of interiors which permits divisioning with curtains for more privacy.

On the whole the 1937 product will have a vastly better appearance due

(*Specifications on pages 685, 686, 687, 688*)

(*Article continued on page 687*)

Specifications of

Line Number	MAKE	MODEL	PRICES			WEIGHT (Lbs.)		DIMENSIONS (In Ft. & Ins.)			CHASSIS											COUPLING		
												Springs				Axle								
			Shell	Equipment	Total	Total (Excluding Draw Bar)	On Draw Bar	Length (Excluding Draw Bar)	Width	Height	Construction	Type	No. of Leaves	Width	Length (Ins.)	Make	Type	Material	Wheels (No. and Make)	Tire Size	Type	Towing-Car Hitch Provided*	Parking
1	Aerocar Company	Standard Cruiser	....	....	1950	.....	.....	20′ 0″	6′ 10″	8′ 3″	.....	½E	....	2	54	.....	DC	.....	.....	7.00/16	Pne	.....	.....
2	Aerocar Company	Custom Cruiser	....	....	2150	.....	.....	20′ 0″	6′ 10″	8′ 3″	.....	½E	....	2	54	.....	DC	.....	.....	7.00/16	Pne	.....	.....
3	Aerocar Company	Twin Cabin	....	....	2350	.....	.....	20′ 0″	6′ 10″	8′ 3″	.....	½E	....	2	54	.....	DC	.....	.....	7.00/16	Pne	.....	.....
4	Airline Trail Home	Airline Home	....	....	475	700	30	13′ 0″	6′ 2″	.....	St	.....	.....	.....	.....	Own	Str	CM	2-TF	TF	B&S	Yes	PL
5	Airline Trail Home	Folding B...	....	....	475	710	....	13′ 0″	6′ 2″	3′ 11″	St	In	.....	.....	.....	Own	Str	.....	2-TF	TF	B&S	Yes	PL
6	Airfloat Trailer	Airfloat	....	....	695	1100	50	12′ 0″	6′ 4″	7′ 3″	StWo	In	....	.....	.....	.....	.....	.....	2-....	6.00/16	B&S	Yes	Tri
7	Airfloat Trailer	Airfloat	....	....	695	1100	50	12′ 0″	6′ 4″	7′ 3″	StWo	In	....	.....	.....	.....	.....	.....	2-Fo	6.00/16	B&S	Yes	Tri
8	All American Trailer	.....	All	Cust	om	Buil	t Co	aches	.....	.....	St.Wo	½E	10	2	42	Lig	DC	CM	2-KH	6.00/16	B&S	†	JC
9	Anderson Coach	Cruiser	455	155	610	1650	250	16′ 6″	6′ 6″	7′ 4″	St	½E	7	2¼	36	LS	DC	CM	2-Bu	6.00/16	B&S	Yes	JC
10	Anderson Coach	Club-Coach	525	....	725	2050	300	19′ 6″	6′ 6″	7′ 5″	St	½E	8	2¼	36	Lig	DC	CM	2-Bu	6.50/16	B&S	Yes	JC
11	Anderson Coach	Club-Coach	.....	....	1045	2350	350	22′ 0″	6′ 6″	7′ 4″	St	½E	10	2¼	36	Lig	DC	CM	2-Bu	7.50/16	B&S	Yes	JC
12	Auto-Cruiser Mfg	Auto-Cruiser-23	1130	....	1650	2320	375	23′ 0″	6′ 6″	7′ 10″	St	Un	12	1¾	30½	Lig	DC	CN	2-.....	6.50/16	B&S	†	JC
13	Auto-Cruiser Mfg	Auto-Cruiser-25	1425	....	2400	2490	400	25′ 0″	6′ 6″	7′ 10″	St	Un	12	1¾	30½	Lig	DC	CN	2-.....	6.50/16	B&S	†	JC
14	Auto-Cruiser Mfg	Auto-Cruiser-21	850	....	1135	1960	325	21′ 0″	6′ 3″	7′ 10″	St	Un	12	1¾	30½	Lig	DC	CN	2-.....	6.00/16	B&S	†	JC
15	Auto-Cruiser Mfg	Auto-Cruiser-19	700	....	895	1750	300	19′ 0″	6′ 6″	7′ 10″	St	½E	11	1¾	30½	Lig	DC	CN	2-.....	6.00/16	B&S	†	JC
16	Auto-Cruiser Mfg	Auto-Cruiser-17	545	....	645	1450	275	17′ 0″	6′ 6″	7′ 10″	St	½E	11	1¾	30½	Lig	DC	CN	2-.....	6.00/16	B&S	†	JC
17	Batavia Body Co	Tour-a-way	475	175	650	2115	335	16′ 6″	6′ 8″	7′ 6″	St	½E	9	1¾	38	Lig	DC	CM	2-.....	6.00/16	B&S	†	JC
18	Bender Body Co	.....	....	....	....	.....	.....	14′ 0″	6′ 3″	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	Bender Body Co	.....	....	....	....	.....	.....	16′ 4″	6′ 3″	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	Bender Body Co	.....	....	....	....	.....	.....	18′ 6″	6′ 3″	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	Cantrell, J. T	Cantrell Cottage	....	....	835	1725	275	17′ 0″	6′ 9″	7′ 8″	St.Wo	½E	11	1¾	38	Lig	DC	CM	2-Bu	6.00/16	B&S	†	JC
22	Cantrell, J. T	Cruiser	319	126	445	1500	175	14′ 0″	6′ 9″	7′ 8″	St.Wo	½E	9	1¾	40	Lig	DC	CM	2-Bu	6.00/16	B&S	†	JC
23	Caravan Trailer	Premier	3000	500	3500	1900	240	17′ 0″	6′ 8″	6′ 3″	Al.Wo	½E	10	2	32	Own	Rad	FS	2-TF	TF	B&S	†	PL
24	Caravan Trailer	Tourist	750	250	1000	1400	200	16′ 0″	6′ 6″	6′ 3″	St.Wo	½E	10	1¾	32	Own	DC	CM	2-Bu	6.00/16	B&S	Yes	PL
25	Caravan Trailer	Tax Dodger	300	125	425	900	100	11′ 0″	6′ 5″	6′ 2″	Wo	½E	8	1½	30	Own	DC	FS	2-Fo	5.50/16	B&S	†	PL
26	Clarkspeed Trailer	"C"	....	....	695	1700	250	18′ 2″	6′ 9″	6′ 5″	St.Wo	½E	9	2	40	Lig	Str	CM	2-Bu	6.00/16	B&S	†	JC
27	Covered Wagon	Custom Coach	....	....	....	.....	.....	20′ 6″	6′ 6″	7′ 8″	St	½E	10*	1¾*	37¾*	.....	DC	Mol	4-MW	6.25/16	B&S	†	JC
28	Covered Wagon	De Luxe	....	....	....	1840	410	17′ 2″	6′ 6″	7′ 8″	St	½E	11	1¾	37¾	.....	DC	Mol	2-MW	6.25/16	B&S	†	JC
29	Covered Wagon	Standard	....	....	....	.....	.....	14′ 8″	6′ 6″	7′ 8″	St	½E	10	1¾	37¾	.....	DC	Mol	2-MW	5.50/16	B&S	†	JC
30	Cresmer Manufacturing	Riversider-S	....	....	685	1680	200	14′ 6″	6′ 4″	6′ 4″	St	½E	11	1¾	37	HW	DC	CM	2-.....	6.00/16	B&S	†	CW
31	Cresmer Manufacturing	Riverside-M	....	....	785	1760	200	14′ 6″	6′ 4″	6′ 4″	St	½E	11	1¾	37	HW	DC	CM	2-.....	6.00/16	B&S	†	CW
32	Curtiss Aerocar Co	161-B	2800	....	4850	.....	.....	23′ 2″	6′ 9″	7′ 8¾″	Wo	½E	12	2	53¾	Lig	DC	CM	3-MW	7.50/16	Pne	Yes	Tri
33	Curtiss Aerocar Co	161-JC	2500	....	3695	.....	.....	22′ 0″	6′ 9″	7′ 8¾″	Wo	½E	12	2	53¾	Lig	DC	CM	3-MW	7.50/16	Pne	Yes	Tri
34	Curtiss Aerocar Co	161-E	2500	....	3890	.....	.....	21′ 9″	6′ 9″	7′ 8¾″	Wo	½E	12	2	53¾	Lig	DC	CM	3-MW	7.50/16	Pne	....	Tri
35	Curtiss Aerocar Co	JC-100	1850	....	2995	.....	.....	21′ 8″	6′ 9″	7′ 8¾″	Wo	½E	10	1¾	52	Lig	DC	CM	3-MW	6.50/16	Pne	Yes	Tri
36	Eckland Bros. Co	Home-Ette	....	....	925	1800	300	15′ 0″	6′ 8″	6′ 2″	St	½E	9	1¾	36	For	DC	FS	2-Op	6.00/16	B&S	Yes	CW
37	Edwards Iron Works	Home-mobile-16	....	....	....	.....	.....	.....	.....	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38	Edwards Iron Works	Home-mobile-8	....	....	....	.....	.....	.....	.....	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39	Edwards Iron Works	Home-mobile-20	....	....	....	.....	.....	.....	.....	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	Elcar Coach Co	De Luxe	400	....	575	1800	200	18′ 0″	6′ 6″	7′ 8″	St	½E	....	.....	.....	For	.....	CM	2-MW	6.00/16	B&S	†	JC
41	Elcar Coach Co	Standard	300	....	448	1500	175	16′ 0″	6′ 6″	7′ 8″	St	½E	9	2	36	For	.....	CM	2-MW	6.00/16	B&S	†	JC
42	Federal Motor Truck	De Luxe	625	††	††	2300	300	18′ 3″	6′ 9″	6′ 8″	St	½E	11	1¾	40	Lig	DC	CM	2-Bu	6.50/16	B&S	†	JC
43	General Trailers Corp	.....	....	....	890	.....	.....	19′ 3″	.....	7′ 8″	St.Wo	½E	....	1¾	36	.....	DC	.....	.....	6.00/16	B&S	.....	JC
44	Gilkison, E. P., Sons	Luxury Cruiser	....	....	1095	2750	325	17′ 10″	6′ 7″	6′ 2″	St	½E	11	2	40	Lig	DC	FS	2-KH	7.00/16	B&S	....	JC
45	Gilkison, E. P., Sons	Sportland Cruiser	....	....	965	2450	310	17′ 10″	6′ 7″	6′ 2″	St	½E	11	2	40	Lig	DC	FS	2-KH	7.00/16	B&S	....	JC
46	Gilkison, E. P., Sons	Champion	....	....	820	2200	280	17′ 0″	6′ 7″	6′ 2″	St	½E	10	2	40	Lig	DC	FS	2-KH	6.50/16	B&S	†	JC
47	Gilkison, E. P., Sons	Skipper	....	....	630	1865	280	17′ 0″	6′ 7″	6′ 2″	St	½E	9	2	40	For	DC	FS	2-KH	6.00/16	B&S	†	JC
48	Gypsy Caravan Co	Standard	....	....	695	1500	300	13′ 0″	6′ 4″	7′ 9″	St	½E	8	2	36	Spec	Tu	CM	2-Fo	6.00/16	B&S	†	JC
49	Gypsy Caravan Co	De Luxe	....	....	895	1750	300	15′ 0″	6′ 4″	7′ 9″	St	½E	8	2	36	Spec	Tu	CM	2-Fo	6.00/16	B&S	†	JP
50	Hayes Body Corp	Clipper	....	....	395	.....	.....	.....	.....	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
51	Hayes Body Corp	Crusader	....	....	785	.....	.....	.....	.....	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
52	Hayes Body Corp	Crusader De Luxe	....	....	....	.....	.....	.....	.....	.....	St	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
53	Hollywood Steel Trailer	Standard Steel	760	315	1075	1485	240	16′ 0″	6′ 6″	7′ 4″	St	½E	11	2	46	.....	Tu	.....	2-KH	6.00/16	B&S	†	JC
54	Hollywood Steel Trailer	Standard Steel	640	245	885	1400	225	14′ 0″	6′ 6″	7′ 4″	St	½E	11	2	46	.....	Tu	NS	2-KH	6.00/16	B&S	†	JC
55	Hollywood Steel Trailer	Standard Steel	1025	370	1395	1900	300	18′ 0″	6′ 6″	7′ 4″	St	½E	11	2	46	.....	Tu	.....	2-KH	6.00/16	B&S	†	JC
56	Kabin Koach Co	Custom-90	950	440	1390	2100	325	19′ 0″	6′ 8″	7′ 6″	St	½E	9	2	36	For	DC	CM	2-MW	7.00/16	B&S	†	JC
57	Kabin Koach Co	De Luxe-75	610	251	861	.....	.....	17′ 0″	6′ 8″	7′ 6″	St	½E	9	2	36	Va	DC	CM	2-MW	6.25/16	B&S	†	JC
58	Kabin Koach Co	Standard 57A	455	200	655	1800	325	16′ 0″	8′ 8″	7′ 6″	St	½E	9	2	36	Va	DC	.....	2-MW	6.00/16	B&S	†	JC
59	Kaycraft Eng. Corp	Kampster-Std	....	....	225	500	60	8′ 0″	4′ 0″	5′ 7″	St.Wo	In	.....	.....	.....	Own	KA	FS	2-Fo	5.00/17	B&S	Yes	Tri
60	Kaycraft Eng. Corp	Kampster-De Luxe	....	....	325	750	70	10′ 0″	4′ 0″	5′ 7″	St	In	.....	.....	.....	Own	KA	FS	2-Fo	6.00/16	B&S	Yes	Tri
61	Kozy-Coach Co	Klipper	....	....	845	1780	300	17′ 0″	6′ 6″	6′ 1″	St.Wo	Un	11	2	36	Lig	DC	CM	2-Bu	6.00/16	B&S	†	JC
62	Kozy-Coach Co	De Luxe	640	125	765	1795	325	18′ 0″	6′ 6″	6′ 1″	St.Wo	Un	11	2	36	Lig	DC	CM	2-Bu	6.00/16	B&S	†	JC
63	Kozy-Coach Co	Standard	503	125	628	1600	300	18′ 0″	6′ 6″	6′ 1″	St.Wo	Un	11	2	36	Lig	DC	CM	2-Bu	6.00/16	B&S	†	JC
64	McLaren Trailer Co	Cruiser-16	....	....	785	1640	265	16′ 0″	6′ 5″	7′ 9″	St	½E	.....	.....	.....	Own	DC	CM	2-.....	6.50/16	B&S	†	JC
65	McLaren Trailer Co	Custom Cruiser	....	....	....	.....	.....	20′ 0″	6′ 8″	7′ 9″	St	½E	12	2	40	Own	DC	CM	4-.....	6.00/16	B&S	†	JC
66	McLaren Trailer Co	Cruiser	....	....	685	1380	185	14′ 0″	6′ 5″	7′ 9″	St	½E	10	.....	.....	Own	DC	CM	2-.....	6.00/16	B&S	†	JC
67	McLaren Trailer Co	Cruiser-12	....	....	495	1180	140	12′ 0″	6′ 5″	7′ 9″	St	½E	.....	.....	.....	Own	DC	CM	2-.....	5.50/17	B&S	†	JC

House Trailers

BODY										EQUIPMENT																	
Side Wall Construction		Windows						Floor						Water Tank			Lighting										
Exterior	Interior	Number	Type	Screens	No. of Ventilators	Top Construction	Top Insulation	Construction	Covering	Sleeping Capacity (No. of Persons)	Ice Box Capacity (Lbs.)	Sink (Material)	Capacity (Gals.)	Type Feed	Stove (Make & Type)	Internal or External	Source of Current Battery Location	Plug Connection Exter. Current	Toilet	Bath (Type)	Bumper	Brakes—Make	Wired for Radio	Table	Line Number
.....	.....	...	...	.....	1	.....	.....	.....	L	.....	...	Po	18	...	.....	I&E	.....	.....	N	N	Y	.....	..	Y	1
.....	.....	...	...	.....	1	.....	.....	.....	L	.....	...	Po	18	...	.....	I&E	.....	.....	Y	Sh	Y	.....	..	Y	2
.....	.....	...	...	.....	1	.....	.....	.....	L	.....	...	Po	18	...	.....	I&E	.....	.....	Y	Sh	Y	.....	..	Y	3
LP	Ply	3	M	W&D	1	LP	F	Ply	L	4	25	En	10	Op	...-G	I&E	Cb	Y	†	....	Y	N	Y	Y	4
LP	Ply	3	TH	W	...	LP	F	Ply	L	4	25	En	10	Pu	Op-G	I&E	Cb	Y	†	N	Y	N	Y	Y	5
Mas	.....	8	M	W&D	3	Mas	N	Ply	Mas	4	35	En	15	Pu	Col-G	I	Cb	Y	N	....	N	†	Y	Y	6
Mas	.....	8	M	W&D	3	Mas	N	Ply	Mas	3	35	En	15	Pu	Col-G	I	Cb	Y	N	....	N	†	Y	Y	7
Op	Ply	8	TH	W&D	2	CP	Ca	Op	L	Op	50	Po	15	Pu	Col-G	I&E	Op	Y	†	†	Y	Vel	Y	Y	8
Mas	Ply	8	TH	W&D	2	CC	Op	Wo	L	4	75	En	16	Pu	Col-G	I&E	Cb	....	N	....	Y	Ben	Y	Y	9
Mas	Ply	11	TH	W&D	2	Can	Op	Wo	L	4	75	Po	16	Pu	Col-G	I&E	Cb	Y	Y	Op	Y	Ben	Y	Y	10
Mas	Ply	13	TH	W&D	3	CC	Op	Wo	L	4	75	En	30	Pr	Col-G	I&E	CT	Y	Y	Y	Y	Ben	Y	Y	11
Mas	Ply	13	AT	W&D	...	Can	Cp	Wo	L	5	75	Zc	30	....	Col-G	I&E	Cb	Y	Y	Y	Y	B-K	Y	Y	12
Mas	Ply	13	AT	W&D	...	Can	Cp	Wo	L	5	75	Zc	30	....	Col-G	I&E	Cb	Y	Y	Y	Y	B-K	Y	Y	13
Mas	Ply	13	AT	W&D	3	Can	Cp	Wo	L	5	50	Zc	30	Gr	Col-G	I&E	Cb	Y	Y	Y	Y	B-K	Y	Y	14
Mas	Ply	11	AT	W&D	3	Can	Cp	Wo	L	5	50	Zc	20	Gr	Col-G	I&E	Cb	Y	Y	....	Y	.....	Y	Y	15
Mas	Ply	9	AT	W&D	2	Can	Cp	Wo	L	2	50	Po	20	Gr	Col-G	I&E	Cb	Y	N	....	Y	.....	Y	Y	16
LP	Ply	8	TH	W&D	1	CP	Cp	Wo	L	4	50	En	20	Pu	Col-G	I&E	Cb	Y	N	....	Y	.....	Y	Y	17
ShS	.....	...	...	.....	...	.....	.....	.....	.....	4	...	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	Yes	...	...	18
ShS	.....	...	...	.....	...	.....	.....	.....	.....	4	...	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	Yes	...	...	19
ShS	.....	...	...	.....	...	.....	.....	.....	.....	4	...	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	Yes	...	...	20
LP	Ply	8	AT	W&D	2	CP	Cp	Ply	L	4	50	Po	15	Pu	Col-G	I&E	†	Y	Y	†	Y	War	Y	Y	21
LP	Ply	7	AT	W&D	1	CP	Cp	Plv	L	4	50	Po	15	Pu	Col-G	I&E	Cb	Y	N	....	Y	War	Y	Y	22
LP	Ply	16	AT	W&D	2	Scr	Cp	Ply	L	4	50	Ch	30	Pu	Op-Op	I	....	Y	N	....	Y	War	Y	Y	23
CL	Ply	8	TH	W&D	2	Cel	Cp	Ply	L	4	40	En	30	Pr	Col-Op	I	Cb	Y	N	....	Y	War	Y	Y	24
LP	Ply	6	TH	W&D	2	Ply	Cp	Ply	L	4	25	Po	30	Pr	Col-G	I	Cb	Y	N	....	Y	†	Y	Y	25
Mas	Ply	7	TH	W&D	2	CP	Af	Ply	L	4	50	En	16	Pu	Kam-G	I&E	Cb	Y	N	....	†	†	Y	Y	26
GS	Ply	11	DT	W&D	2	CP	Cp	Ply	L	4	75	Po	30	Pr	.....	I&E	Cb	Y	Y	Sh	Y	War	Y	Y	27
GS	Ply	9	AT	W&D	1	CP	Cp	Ply	L	4	50	Po	20	Pr	.....	I&E	Cb	Y	Y	Sh	Y	†	Y	Y	28
GS	Ply	9	DT	W&D	1	CP	Cp	Ply	L	4	50	Po	20	Pr	.....	I&E	Cb	Y	N	....	N	†	Y	Y	29
MP	Ply	8	SI	W&D	1	Prs	Fl	Wo	L	4	50	Po	35	Pu	Col-G	I&E	Cb	Y	N	Tu	Y	†	Y	Y	30
MP	Ply	8	SI	W&D	1	Prs	Fl	Wo	L	4	50	Po	35	Pu	Col-G	I&E	Cb	Y	N	Tu	Y	†	Y	Y	31
ML	ML	12	AT	W	4	Cel	Cf	Ply	Asp	4	75	SS	30	Pr	Wil-A	I&E	CT	Y	Y	Sh	Y	Ben	Y	Y	32
ML	ML	9	AT	W	4	Cel	Cf	Ply	Asp	4	75	SS	30	Pr	Wil-A	I&E	CT	Y	Y	Sh	Y	Ben	Y	Y	33
ML	ML	12	AT	W	4	Cel	Cf	Ply	Asp	4	75	SS	30	Pr	Wil-A	I&E	CT	Y	Y	Sh	Y	Ben	Y	Y	34
ML	ML	10	TH	W	4	Cel	Cp	Ply	L	4	75	SS	30	Pr	Wil-A	I&E	Cb	Y	Y	Sh	Y	Ben	Y	Y	35
Mas	Ind	N	Thr	W	2	CP	Bw	Ply	L	4	65	En	20	Gr	Col-G	I&E	CT	Y	N	No	Y	†	Y	Y	36
ShS	.....	...	AT	.....	...	.....	.....	.....	.....	...	...	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	†	...	...	37
ShS	.....	...	AT	.....	...	.....	.....	.....	.....	...	...	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	†	...	...	38
ShS	.....	...	AT	.....	...	.....	.....	.....	.....	...	...	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	†	...	...	39
LP	Ply	9	TH	W&D	1	CP	Cp	Wo	L	4	50	Po	12	Gr	Col-G	I&E	Cb	Y	Y	Sh	Y	†	Y	Y	40
LP	Ply	8	TH	W&D	1	CP	Cp	Wo	L	4	50	Po	12	Gr	Col-G	I&E	Cb	Y	N	....	Y	.....	Y	Y	41
ShS	Ply	7	TH	W&D	2	Can	.....	Ply	L	4	50	Po	30	Pu	Mid-G	I&E	Cb	Y	N	....	Y	Ben	Y	Y	42
.....	.....	6	.....	.....	2	.....	.....	Ply	L	4	75	Po	20	Pu	...-G	I&E	.....	.....	N	.....	.....	.....	...	Y	43
MS	Ply	9	AT	W&D	3	CC	Cf	Wo	L	4	50	En	28	Gr	Pre-G	I&E	Cb	Y	Y	Sh	Y	†	Y	Y	44
MS	Ply	9	AT	W&D	3	CC	Cf	Wo	L	4	50	En	28	Gr	Col-G	I&E	Cb	Y	Y	Sh	Y	†	Y	Y	45
MS	Ply	8	AT	W&D	1	CC	Cf	Wo	L	4	50	En	25	Gr	Col-G	I&E	Cb	Y	...	.....	Y	†	Y	Y	46
MS	Ply	8	AT	W&D	1	CC	Cf	Wo	L	4	50	En	25	Gr	Col-G	I&E	Cb	Y	N	....	Y	†	Y	Y	47
LP	Ply	11	Con	.....	...	CP	As	Ply	.....	3	50	....	20	Pu	Col-G	I&E	Cb	Y	Y	....	†	Ben	Y	Y	48
LP	Ply	13	Con	W&D	4	CP	As	Ply	L	4	50	....	20	Pu	Col-G	I&E	Cb	Y	Y	....	†	Ben	Y	Y	49
.....	.....	...	...	.....	...	.....	.....	.....	.....	...	...	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	...	...	50
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.....	.....	...	...	.....	...	.....	.....	.....	.....	...	...	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	...	...	52
ShS	Ply	8	AT	W&D	3	LT	Cf	Wo	L	4	50	Po	22	Pu	Col-Op	I&E	Tb	Y	..	Tu	Y	Ben	Y	Y	53
ShS	Ply	8	AT	W&D	3	LT	Cf	Wo	L	4	50	Po	22	Pu	Col-Op	I&E	Tb	Y	..	.....	Y	Ben	Y	Y	54
ShS	Ply	8	AT	W&D	3	LT	Cf	Wo	L	4	50	Po	22	Pu	Col-Op	I&E	Tb	Y	..	Tu	Y	Ben	Y	Y	55
ShS	Ply	9	AT	W&D	2	LT	.....	Ply	L	4	75	Po	30	Pr	PT-G	I&E	Cb	Y	Y	Sh	Y	Ben	Y	Y	56
ShS	Ply	9	AT	W&D	1	LT	.....	Ply	L	4	50	Po	18	Pu	Col-G	I&E	Cb	Y	†	†	†	†	Y	Y	57
ShS	Ply	7	AT	W	1	LT	.....	Ply	L	4	50	En	6	Gr	Col-G	I&E	Cb	Y	N	N	N	†	Y	Y	58
LP	Ply	2	TH	W&D	...	Mas	.....	Ply	N	2	75	....	12	Gr	...-G	I	Cb	Y	N	....	†	.....	N	Y	59
LP	Ply	2	TH	W&D	...	LP	.....	Ply	N	2	45	....	10	...	...-G	I	Cb	Y	N	....	†	.....	N	Y	60
Mas	Ply	7	TH	W&D	2	CM	Cp	Wo	L	4	50	En	17	Pu	Col-G	I&E	Cb	Y	N	....	Y	†	Y	Y	61
Mas	Ply	7	TH	W&D	2	CM	Cp	Wo	L	4	50	Po	17	Pu	Col-G	I&E	Cb	Y	N	....	N	†	Y	Y	62
Mas	Ply	7	TH	W&D	2	CM	Cp	Wo	L	4	50	Po	13	Gr	Col-G	I&E	Cb	....	...	.....	...	†	Y	Y	63
MD	Ply	8	TH	W&D	2	Mas	Ce	Wo	L	4	75	En	20	Pu	Op-Op	I&E	CT	Y	Y	Sh	Y	Ben	Y	Y	64
MD	Ply	10	AT	W&D	4	Mas	Cf	Wo	L	6	75	En	20	Pu	Ro-G	I&E	Tb	Y	Y	Sh	Y	Ben	Y	Y	65
MD	Ply	8	TH	W&D	2	Mas	Rw	Ply	L	4	50	En	15	Pu	Col-G	I&E	Cb	Y	..	Sh	†	†	Y	Y	66
MD	Ply	8	TH	W&D	2	Mas	Rw	Ply	L	4	25	En	15	Pu	Col-G	I&E	Cb	Y	N	†	†	No	Y	Y	67

ABBREVIATIONS:

A—Alcohol
AD—Auto Decking
Af—Alfol
Al—Aluminum
Als—Aluminum Sheet
Al Wo—Aluminum and Wood
As—Air space
Asp—Asphalt Tile
AT—Automobile Type

B—Ball only
Ben—Bendix
B&S—Ball and Socket
Bu—Budd Wheel Co.
Bw—Balsam Wool

Ca—Full Cantilever
Can—Canvas
Cb—Car battery
CC—Canvas and Celotex
Ce—Celotex Padding
Cel—Celotex
Cf—Cotton Padding and Foil
Ch—Chromium
CM—Canvas over Masonite
CM—Chrome Molybdenum (axle material)
CN—Chrome Nickel Steel
Col—Coleman
Con—Conventional
Cp—Cotton padding
CP—Canvas and Plywood
CL—Celotex and Leatherette
Cr—Crank
CT—Car or Trailer Battery
CW—Caster Wheel

DC—Drop Center
DT—Drop Type

E—Exterior
En—Enamel
ES—End and side quarters screened

F—Fibre
Fl—Foil
For—Foreman
FS—Forged Steel

G—Gasoline
Gr—Gravity
GS—Galvanized Steel

HW—Howard Ward, Inc.

I—Interior
IN—Independently Sprung
Ind—Industrial board

JC—Jack and Caster Wheel
JP—Jack and Caster Wheel and Parking Leg
Ju—Jute

Ka—Kapock
KA—Knee Action
Kam—Kampkook
KH—Kelsey-Hayes

L—Linoleum
Lea—Leatherette
Lig—Liggett Steel and Axle Company
LP—Leatherette and Plywood
LS—Liggett or Shamrock
LT—Leatherette and Metal

M—Marine Type Windows
Mas—Masonite
Met—Metullation
ML—Masonite and Leatherette
Mol—Molybdenum
MP—Masonite and Plywood
MS—Masonite and Steel
Msp—Midland Steel Products
MW—Motor Wheel

N—No or None
NS—Nickel Steel

Op—Optional

(Continued on page 689)

Specifications of

Line Number	MAKE	MODEL	PRICES			WEIGHT (Lbs.)		DIMENSIONS (in Ft. & Ins.)			CHASSIS										Tire Size	COUPLING		Parking
			Shell	Equipment	Total	Total (Excluding Draw Bar)	On Drawbar	Length (Excluding Draw Bar)	Width	Height	Construction	Springs: Type	Springs: No. of Leaves	Springs: Width	Springs: Length (Ins.)	Axle: Make	Axle: Type	Axle: Material	Wheels (No. and Make)			Type	Towing-Car Hitch Provided?	
68	Miller Trailers	Hi-Way Special	....	....	695	1480	240	18′ 8″	6′ 4″	7′ 3″	Wo	½E	10	1¾	40	Lig	.....	FS	2-Fo		6.00/16	B&S	†	PL
69	Miller Trailers	By-Way	250	145	395	1100	230	14′ 0″	6′ 4″	7′ 3″	Wo	½E	10	1¾	40	Lig	.....	FS	2-Fo		6.00/16	B&S	†	JC
70	Miller Trailers	Hi-Way	....	....	600	1300	230	21′ 0″	6′ 4″	7′ 3″	Wo	½E	11	1¾	40	Lig	.....	FS	2-Fo		6.00/16	B&S	†	PL
71	Palace Travel Coach	Standard	395	....	548	1700	300	16′ 0″	6′ 6″	7′ 9″	St	½E	9	1¾	42	Lig	DC	CM	2-Bu		6.00/16	B&S	No	JC
72	Palace Travel Coach	Master	595	....	785	2000	400	18′ 0″	6′ 6″	7′ 9″	St	½E	11	1¾	42	Lig	DC	CM	2-Bu		6.00/16	B&S	†	JC
73	Palace Travel Coach	Master De Luxe	630	....	995	2100	400	18′ 0″	6′ 6″	7′ 9″	St	½E	11	1¾	42	Lig	DC	CM	3-Bu		6.00/16	B&S	†	JC
74	Pierce-Arrow	A	875	....	1145	....	325	19′ 0″	6′ 8″	7′ 9″	St	Ca	....	....	....	....	.....	St	.....		6.50/16	B&S	....	SJ
75	Pierce-Arrow	B	665	....	845	....	268	16′ 6″	6′ 8″	7′ 9″	St	Ca	....	....	....	....	.....	St	.....		6.00/16	B&S	....	SJ
76	Pierce-Arrow	C	510	....	595	....	238	13′ 7″	6′ 8″	7′ 9″	St	Ca	....	....	....	....	.....	St	.....		6.00/16	B&S	....	SJ
77	Raymond Products Co	Travelo-De Luxe	550	195	745	1950	300	16′ 6″	6′ 11″	7′ 7″	St.Wo	Un	9	2	36	Lig	DC	CM	2-MW		6.00/16	B&S	†	JC
78	Raymond Products Co	Travelo-Standard	335	150	485	1550	300	14′ 6″	6′ 11″	7′ 7″	Wo	Un	7	2	36	Lig	DC	CM	2-MW		6.00/16	B&S	†	JP
79	Roycraft Coach Co	A-Junior	....	....	450	1585	285	14′ 0″	6′ 8″	6′ 2″	St.Wo	½E	9	1¾	35½	Lig	DC	.....	2-Bu		6.00/16	B&S	†	JC
80	Roycraft Coach Co	E-Craftsman	....	....	620	1410	300	16′ 0″	6′ 8″	6′ 2″	St.Wo	½E	10	1¾	35½	Lig	DC	.....	2-Bu		6.00/16	B&S	†	JC
81	Roycraft Coach Co	19F-Craftsman	....	....	995	1700	....	19′ 0″	6′ 8″	6′ 2″	St.Wo	....	11	2	36	Lig	DC	.....	2-Bu		6.00/16	B&S	†	JC
82	Roycraft Coach Co	Master Cruiser	....	....	2100	2200	375	20′ 0″	6′ 8″	6′ 2″	St.Wo	....	11	2	36	Lig	DC	.....	2-.....		6.50/16	B&S	†	JC
83	Schelm Brothers	Super	....	....	1500	2420	380	18′ 6″	7′ 0″	7′ 7″	St	½E	10	2½	40	Own	DC	CM	2-Sa		7.50/15	B&S	†	PL
84	Schelm Brothers	De Luxe	835	390	1225	1990	310	17′ 0″	7′ 0″	7′ 7″	St	½E	10	2½	40	Own	DC	CM	2-Sa		7.50/16	B&S	†	PJ
85	Schelm Brothers	Standard	585	....	725	1600	225	16′ 0″	7′ 0″	7′ 7″	St	½E	10	1¾	40	Lig	Cr	CM	2-Sa		7.00/15	B&S	†	JC
86	Schult Trailers, Inc	De Luxe	425	....	695	1700	225	17′ 0″	6′ 6″	8′ 0″	St.Wo	½E	10	1¾	38	Lig	DC	NS	2-MW		6.00/16	B&S	†	JC
87	Schult Trailers, Inc	Nomad	350	92	442	1400	200	15′ 0″	6′ 6″	6′ 1″	St.Wo	....	10	1¾	38	Lig	DC	.....	2-MW		6.00/16	B&S	†	JC
88	Schult Trailers, Inc	Travelease	315	67	382	1400	200	14′ 0″	6′ 6″	8′ 0″	St.Wo	½E	10	1¾	38	Lig	DC	NS	2-MW		5.25/17	B&S	†	JC
89	Schult Trailers, Inc	Caravan	248	70	318	1200	175	14′ 0″	6′ 6″	6′ 2″	St.Wo	½E	10	1¾	38	Lig	DC	NS	2-MW		5.25/17	B&S	†	JC
90	Seminole Coach Co		395	....	570	....	200	19′ 0″	6′ 6″	.....	St.Wo	....	....	....	.....	Lig	DC	.....	2-.....		6.00/16	B&S	†	JC
91	Silver Dome, Inc	Hyway	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....		....	....	....	....
92	Silver Dome, Inc	Hyway, De Luxe	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....		....	....	....	....
93	Silver Dome, Inc	Suburban	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....		....	....	....	....
94	Silver Dome, Inc	Custom Club	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....		....	....	....	....
95	Spiffy Craft Products	Homette	355	....	435	2190	240	18′ 0″	7′ 0″	6′ 3″	Wo	Un	10	2	39	Lig	DC	CM	2-Bu		6.00/16	B&S	Yes	JC
96	Spiffy Craft Products	Honor	325	70	395	1900	260	16′ 0″	7′ 0″	6′ 3″	St.Wo	Un	9	2	39	Lig	DC	CM	2-Bu		6.00/16	B&S	Yes	JC
97	Spiffy Craft Products	De Luxe	1000	350	1350	3000	375	21′ 0″	6′ 8″	6′ 4″	Wo	Un	12	2¼	42	Lig	.....	CM	2-Bu		7.00/16	B&S	Yes	JC
98	Spiffy Craft Products	16	575	75	650	2250	225	19′ 0″	6′ 8″	6′ 3″	Wo	Un	9	2	39	Lig	DC	CM	2-Bu		6.00/16	B&S	Yes	JC
99	Spiffy Craft Products	18	800	250	1050	2800	300	21′ 0″	6′ 8″	6′ 4″	Wo	Un	12	2	42	Lig	DC	CM	2-Bu		7.00/16	B&S	Yes	JC
100	Split Coach Motor	York Cruiser-Junior	....	....	....	1450	250	13′ 0″	6′ 7″	7′ 4″	St.Wo	½E	7	2¼	48	Lig	DC	CM	.....		6.00/16	B&S	†	PL
101	Split Coach Motor	York Cruiser-Senior	....	....	....	1950	350	17′ 0″	6′ 7″	7′ 5″	St.Wo	½E	9	2¼	48	Lig	DC	CM	.....		7.00/16	B&S	†	PL
102	Standard Trailer Co	Airflow-16	345	205	550	1690	220	16′ 0″	6, 6″	6′ 3″	St	Un	9	2	40	Vac	DC	FS	2-Vac		6.00/16	B&S	Yes	JC
103	Standard Trailer Co	12	240	155	395	1200	180	12′ 0″	6′ 6″	6′ 3″	St	½E	9	1¾	40	Lig	DC	FS	2-MW		5.25/17	B&S	Yes	JC
104	Standard Trailer Co	14	320	255	575	1670	200	14′ 0″	6′ 6″	6′ 3″	St	Un	9	2	40	Vac	DC	FS	2-Vac		6.00/16	B&S	Yes	JC
105	Sylvan Trailers	Knight	445	....	745	1400	200	15′ 0″	6′ 6″	7′ 9″	St	½E	10	1¾	31	.....	DC	FS	2-.....		6.00/16	B	†	JC
106	Trotwood Trailers, Inc	Master	400	....	565	1800	200	15′ 0″	6′ 6″	7′ 6″	St	In	8	2	25½	Own	In	.....	2-MW		6.00/16	B&S	†	JC
107	Trotwood Trailers, Inc	De Luxe	550	....	845	2200	225	17′ 0″	6′ 6″	7′ 6″	St	In	9	2	25½	Own	In	.....	2-MW		6.00/16	B&S	†	JC
108	Trotwood Trailers, Inc	Cub	250	....	375	1250	175	10′ 5″	6′ 6″	7′ 6″	St	In	6	2	25½	Own	In	.....	2-MW		6.00/16	B&S	†	JC
109	Trotwood Trailers, Inc	Standard	325	....	465	1450	190	13′ 0″	6′ 6″	7′ 6″	St	In	8	2	25½	Own	In	.....	2-MW		6.00/16	B&S	†	JC
110	U. S. Coach Co	Standard	....	....	595	1450	250	14′ 6″	6′ 6″	7′ 6″	St.Wo	½E	8	1¾	40	For	DC	.....	2-.....		6.00/16	B&S	†	JC
111	U. S. Coach Co	De Luxe	825	....	785	1675	275	17′ 0″	7′ 0″	7′ 6″	St	½E	8	....	40½	For	DC	.....	2-.....		6.00/16	B&S	†	JC
112	U. S. Coach Co	Imperial	900	....	1095	2000	300	19′ 0″	7′ 0″	7′ 8″	St	½E	11	....	40½	For	DC	CM	2-.....		.....	B&S	†	JC
113	Wolverine Trailer Coach	Standard-36	325	....	475	1700	200	15′ 8″	6′ 6″	6′ 6″	St.Wo	....	10	2	36	Sha	DC	.....	2-Fo		5.50/17	B&S	†	JC
114	World Roamer Trailer	B	....	....	850	....	....	16′ 0″	.....	.....	St.Wo	½E	11	2	39	.....	.....	FS	2-KH		6.50/16	B&S	Yes	JC
115	World Roamer Trailer	A	....	....	275	....	....	.....	.....	.....	St.Wo	½E	9	1¾	40	.....	.....	FS	2-Fo		.....	B&S	Yes	PL
116	York-Hoover Body Corp.	Sun-Chaser	....	....	490	1100	170	12′ 2″	6′ 4″	7′ 9″	St.Wo	½E	6	1¾	36	Lig	DC	FS	2-Bu		6.00/16	B&S	†	PL

to effort toward reducing wind resistance. This makes for clean flowing lines and a departure from box-like angularity. The result is something that looks less like a miniature house and more like a functional tool for travel.

Parts and equipment suppliers have been contributing steadily to the success of trailer design. Among the items to be improved have been stoves, ice boxes and toilets. Metal cabinet work, replacing wood veneers, will also make its appearance. More and more attention is being paid to electrification of the trailer, hence we find small electric light plants and a battery windcharger for mounting on the trailer nose.

We declared several paragraphs back that there may come a differentiation in products based upon use rather than cost. A hint of this is given in the Nash car's construction affording conversion for sleeping; in the advent of very light but excellently made, low cost trailers, and the multiplying of the high-priced swank "home" type. Examples of the fleet type are the "Sun Chasr," produced by York-Hoover, and the Airfloat, hailing from Los Angeles. The Sun Chasr has a steel and wood chassis. The lower

House Trailers

BODY										EQUIPMENT																				
Side Wall Construction		Windows						Floor						Water Tank			Lighting													
Exterior	Interior	Number	Type	Screens	No. of Ventilators	Top Construction	Top Insulation	Construction	Covering	Sleeping Capacity (No. of Persons)	Ice Box Capacity (Lbs.)	Sink (Material)	Capacity (Gals.)	Type Feed	Stove (Make & Type)	Internal or External	Source of Current Battery Location	Plug Connection Exter. Current	Toilet	Bath (Type)	Bumper	Brakes—Make	Wired for Radio	Table	Line Number
Mas	Ply	11	TH	W	2	Can	Cp	Wo	L	4	40	En	10	Gr	Pre-G	I	CT	Y	N	N	N	Ben	Y	Y	68
Mas	Ply	9	TH	W&D	2	Mas	.....	Wo	L	2	40	Po	.....	.....	Pre-G	I&E	CT	Y	N	N	N	No	Y	Y	69
Mas	Ply	12	TH	W	2	CP	Cp	Wo	L	4	40	Po	.....	Gr	Pre-G	I&E	Cb	Y	N	N	N	†	Y	Y	70
LP	Ply	6	TH	W	1	Ply	Cp	Ply	L	4	50	Po	10	Gr	Col-G	I&E	Cb	Y	N	Tu	Y	†	Y	Y	71
LP	Ply	6	TH	W&D	3	Ply	Cp	Ply	L	4	50	PA	15	Gr	Col-G	I&E	Cb	Y	Y	N	Y	†	Y	Y	72
LP	Ply	6	TH	W	3	Ply	Cp	Ply	L	4	50	PA	15	Gr	Col-G	I&E	Cb	Y	Y	N	Y	War	Y	Y	73
Als	Ply	8	TH	W&D	2	Als	.....	Ply	L	4	40	....	24	Pu	...-G	.....	Cb	Y	Y	Y	Y	†	..	Y	74
Als	Ply	8	TH	W&D	1	Als	.....	Ply	L	4	40	....	24	Pu	...-G	.....	Cb	Y	Y	Y	Y	†	..	Y	75
Als	Ply	7	TH	W&D	1	Als	.....	Ply	L	2	40	....	24	Pu	†	.....	Cb	Y	N	N	†	†	..	Y	76
LP	Ply	8	TH	W&D	1	CP	Ju	Wo	L	4	50	En	22	Pu	Col-G	I&E	Cb	Y	Y	N	Y	†	Y	Y	77
LP	Ply	8	TH	W&D	1	CP	Ju	Wo	L	4	50	En	22	Pu	Col-G	I&E	Cb	Y	N	N	Y	†	Y	Y	78
LP	Ply	6	.....	W&D	1	CP	Fl	Wo	L	2	50	En	12½	Pu	Col-G	I	Cb	Y	N	....	Y	N	N	Y	79
LP	Ply	7	TH	W&D	1	CP	Fl	Wo	L	4	50	En	15	Pu	Col-G	I	Cb	Y	†	Y	N	.....	Y	Y	80
LP	Ply	9	TH	W&D	2	CP	Fl	Wo	L	4	50	En	18	Pu	Col-G	I&E	Cb	Y	Y	N	Y	N	Y	Y	81
LP	Ply	9	TH	W&D	2	CP	Fl	.....	L	4	50	Po	20	Pu	Col-G	I&E	Tb	Y	Y	†	Y	Ben	Y	Y	82
Mas	Lea	10	AT	W&D	3	CP	Ce	Ply	L	4	50	En	25	Pu	Col-G	....	Tb	Y	Y	Sh	Y	Ben	Y	Y	83
Mas	Lea	10	AT	W	3	CP	Ce	Ply	L	4	50	En	15	Pu	Col-G	I&E	Tb	Y	N	Tu	Y	Ben	Y	Y	84
Mas	Lea	7	TH	W&D	2	CP	Cp	Ply	L	4	50	En	15	Pu	Col-G	I&E	Tb	Y	N	Tu	Y	Ben	Y	Y	85
LP	Ply	9	.....	W	...	CP	Cp	Ply	L	4	50	Po	20	Pu	Col-G	I&E	Cb	Y	Y	N	Y	†	Y	Y	86
LP	Ply	6	TH	W	1	CP	Cp	Wo	L	4	50	Po	20	Pu	Col-G	I&E	....	Y	N	N	Y	†	Y	Y	87
LP	Ply	8	TH	W	...	CP	Cp	.....	L	2	50	Po	15	Pu	Col-G	I&E	Cb	Y	N	N	Y	.....	Y	Y	88
LP	Ply	7	TH	W	...	CP	Cp	Wo	L	4	50	Po	15	Pu	Col-G	I&E	Cb	Y	N	N	N	†	Y	Y	89
MS	Ply	8	.....	W	1	MS	.....	Ply	L	2	.....	.....	.....	.....	†	.....	†	....	†	....	†	†	.....	.....	90
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	91
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92
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.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	94
MP	Ply	9	TH	W	1	CP	Rw	Ply	L	4	50	En	27	Gr	...-G	I&E	CT	Y	N	N	Y	†	Y	Y	95
MP	Ply	9	TH	W	1	CP	Rw	Ply	Asp	2	50	En	22	Gr	...-G	I	Cb	Y	N	N	Y	N	N	Y	96
LP	Ply	12	.....	W&D	2	CP	Rw	Ply	L	4	50	En	35	Gr	...-G	I&E	Tb	Y	N	N	Y	War	Y	Y	97
Op	Ply	9	TH	W	1	CP	Ce	Ply	L	....	50	En	22	Gr	...-G	I&E	CT	Y	N	N	Y	War	Y	Y	98
LP	Ply	12	TH	W&D	2	CP	Ce	Ply	L	4	50	En	35	Gr	...-G	.....	CT	Y	N	N	Y	War	Y	Y	99
LP	Ply	5	TH	W&D	1	AD	Ju	Ply	L	2	50	Al	15	Pu	...-G	I&E	CT	Y	N	....	†	†	Y	Y	100
LP	Ply	6	TH	W&D	2	AD	Ju	Ply	L	4	50	Al	20	Pu	...-G	I&E	CT	Y	†	†	†	†	Y	Y	101
LP	Ply	6	TH	W&D	1	CP	Met	Wo	L	4	40	Po	15	Pr	Col-G	I	Cb	Y	N	N	Y	Vac	N	Y	102
LP	Ply	6	TH	W&D	1	.....	Met	Wo	L	4	40	En	15	Pr	Col-G	I	Cb	Y	N	N	Y	Vac	N	Y	103
LP	Ply	7	TH	W&D	1	CP	Met	Wo	L	4	40	En	15	Pr	Col-G	I	Cb	Y	Y	†	Y	Vac	Y	Y	104
MS	Ply	12	TH	W&D	2	MS	As	Ply	L	4	50	Po	20	Pu	Kam-G	I&E	Cb	Y	Y	†	N	Fe	Y	Y	105
LP	Ply	7	DT	W&D	1	CP	Cp	Ply	L	4	50	Po	15	Pu	Col-G	I&E	Cb	Y	N	N	Y	†	Y	Y	106
LP	Ply	7	DT	W&D	3	CP	Cp	Ply	L	4	50	Po	15	Pu	Col-G	I&E	Cb	Y	Y	Sh	Y	Ben	Y	Y	107
LP	Ply	6	DT	W&D	1	CP	Cp	Ply	L	2	50	En	15	Pu	Col-G	I&E	Cb	Y	N	N	Y	†	Y	Y	108
LP	Ply	7	DT	W&D	1	CP	Cp	Ply	L	4	50	Po	15	Pu	Col-G	I&E	Cb	Y	N	N	Y	†	Y	Y	109
LP	Ply	....	TH	W&D	1	CP	Ce	Wo	L	4	75	En	10	Pu	Col-G	I&E	Cb	Y	N	N	..	†	..	Y	110
LP	Ply	7	TH	W&D	1	CP	Ju	Wo	L	4	75	En	15	Pu	Col-G	I&E	Cb	Y	N	N	Y	†	Y	Y	111
LP	Ply	9	TH	W&D	2	CP	Ce	Wo	L	4	75	En	20	Pu	Msp-G	I&E	Tb	Y	Y	†	Y	†	Y	Y	112
Pre	Ply	7	TH	W&D	1	CM	.....	Wo	L	4	50	Po	5.3	Gr	Pre-G	I&E	Cb	Y	N	N	†	.....	Y	Y	113
Mas	Lea	10	TH	W&D	1	Mas	Ka	Ply	L	4	50	En	28	....	Col-G	I	CT	Y	N	Tu	Y	N	Y	Y	114
Mas	Ply	2	TH	W	...	Mas	No	Ply	N	2	20	En	5	Gr	Col-G	I	Cb	Y	N	N	N	N	N	Y	115
MS	.....	....	ES	.....	...	.....	.....	Wo	N	4	50	En	5	Gr	...-G	I&E	Cb	Y	N	N	N	†	N	Y	116

PA—Porcelain and Aluminum
PJ—Parking Leg and Jack
PL—Parking Leg
Ply—Plywood
Pne—Patented Pneumatic
Po—Porcelain
Pr—Pressure
Pre—Preway
Pre—Prestwood
PT—Prest-O-Lite
Pu—Pump

Rad—Radius
Ro—Rock Gas
Rw—Rock Wool

Sa—Saginaw Stamping Company
Scr—Screen
Sh—Shower
Sha—Shamrock
ShS—Sheet Steel
SJ—Screw Jack
Sl—Sliding
Spec—Special
SS—Stainless Steel
St—Steel
Str—Straight
StWo—Steel and Wood

Tb—Trailer Battery
TF—To fit Owners Car
TH—Top Hinged
Thr—Throwout
Tri—Tripod
Tu—Tub bath
Tu—Tubular

Un—Underslung

Va—Various
Vac—Vacuum Power Equipment Co.
Vel—Vel-Vac Brakes

W—Windows
W&D—Windows and Doors
War—Warner
Wil—Willis
Wo—Wood

Y—Yes

Zc—Zinc

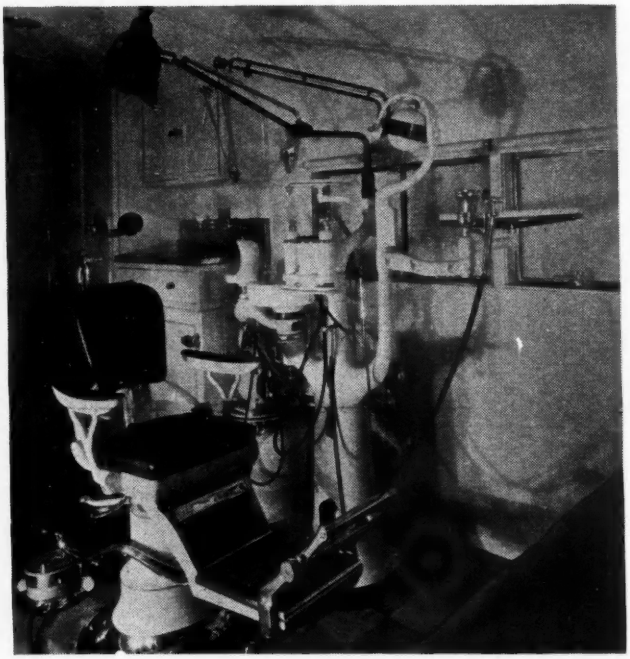
†—At extra cost
††—All equipment except brakes is extra
*—Front only; Rear 6, 1¾, 30
½E—Semi-Elliptic

half of the side walls is made of sheet steel panels backed with composition board, while the top and upper half are covered with a waterproofed fabric, so affixed with zipper fastenings that it can be rolled back to provide an open, screened interior. This trailer is intended for vacation use and the design has the merit of affording outdoor conditions for those who really seek outdoor expeditions.

The Airfloat is replete with features. Though it uses a steel chassis and cross-braced steel frame, the weight has been kept close to 1100 pounds, and it is claimed that the lift on the tow is but 50 pounds. The hitch on this trailer is novel in that the tubular tongue is tied not only to the chassis but to the framing of both side walls.

Among the many homes on wheels, Corwin Willson's Mobile House is by far the most ambitious. Boasting two stories with five rooms, bath, laundry and porch, Willson's trailer is in a class by itself. We understand that it is still in the designing stage, but features of it warrant mention if only to indicate the nature of things to come.

Some of the high spots (a complete description would require an article) are simple curved surfaces, permitting



This Aerocar has been fitted for a traveling dentist while the one below has been arranged for a display of lawn mowers.

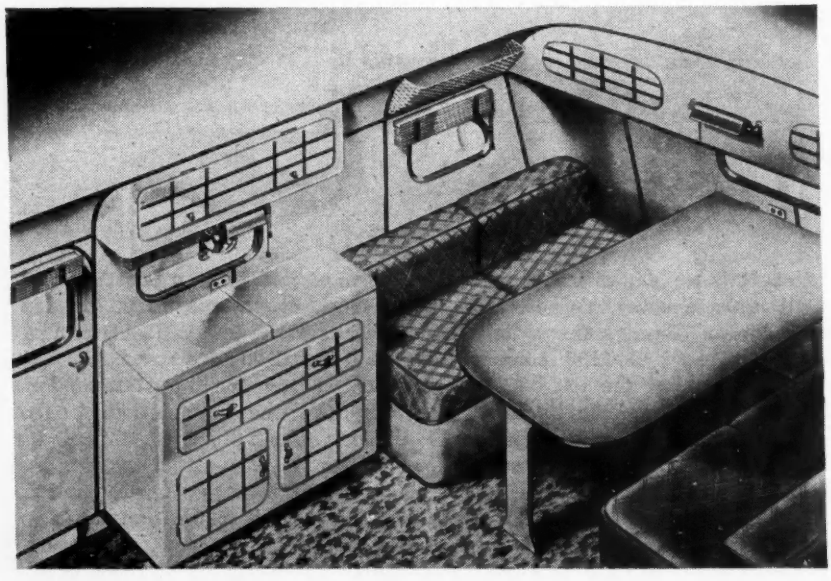
expansion and contraction without harm to the structure, upstairs sleeping bunks, and forced ventilation and heating. Washing, bathing and the like are to be effected with a mixture of water and compressed air, principally air. All waste water flows to a tank which serves to flush the toilet. Then there is a utilities coupling for all fixtures—electricity, water, telephone, gas and sewage disposal—all these utilities are made available quickly through this coupling.

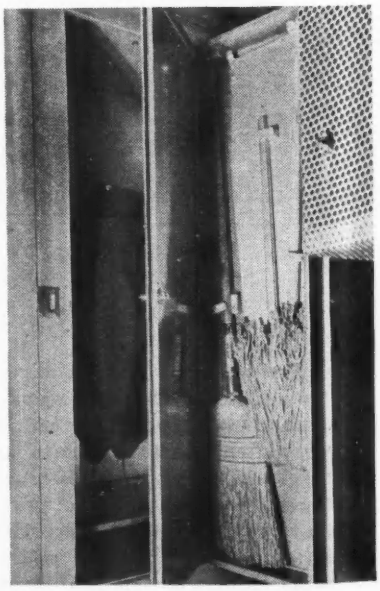
Perhaps the most significant thing about Willson's plan is the recognition given to the basic requirements for wholesome year-round living. It does not presuppose that mobility is a feature strong enough to outweigh the disadvantages inherent in present design and it marches boldly in advance of sanitation legislation. In his own words, it aims to banish cooking in the parlor, eating on the bed and sleeping in the kitchen.

William B. Stout's highway home, which also aims at overcoming cramped quarters, to give a more livable structure, is an expansible type. On the road it has normal proportions, but upon coming to rest the house is opened to provide an apartment in fact with living room 13 by 20 feet. Stout is working with all the materials of modern times much in the manner of the house pre-fabricator who turns his back on tradition and says, 'Let's utilize the discoveries and knowledge of the past decade and cease imitating."

To witness so many newcomers in the trailer field reminds one of the days long ago when automobile manufacturers turned to the production of taxicabs before ordering a tombstone, but a hearty welcome is due none the same. Whatever the disappointments in store for those who are entering on the ground floor, the trailer industry cannot help but profit from the diversity of talent crowding the doors. There is still a free field; there is still opportunity for inventive genius to produce something unlike what has gone before, all talk of standardization notwithstanding, and the leading manufacturer of tomorrow may still be making tricycles or roller skates.

Here is typical interior of an Edwards Home-mobile model for 1937.





Bender has arranged for a utility closet.

Doctors Link Management and Men

(*Continued from page 679*)

3. MAINTENANCE OF CONTROL:

The ordinary methods of inspecting safety equipment, exhaust ventilation, etc., are supplemented by:

(a) Monthly medical inspections of sanitary and working conditions with special attention to possible sources of disease.

(b) Special studies of dust and other air contaminants upon the recommendations of the doctors.

(c) Investigations of known cases of disease.

(d) Discussion with the physicians concerning the possibility of disease resulting from new processes or modifications in old. If there be such, appropriate measures are taken before installation or modification of operations.

4. PRE-EMPLOYMENT EXAMINATIONS:

It is desired that these be sufficiently complete for workmen to be placed in jobs they can do without impairment of health. The doctor's decisions are final.

5. PERIODIC EXAMINATIONS:

New employees are examined frequently and if physical impairments attributable to or aggravated by occupation be found they are transferred. These examinations of new employees are made frequently enough and with sufficient thoroughness to assure recognition of disease in its early stages. All other employees are examined at suitable intervals depending upon the nature of their work or the presence of physical handicaps. The frequency of these examinations is fixed by the doctors, according to their judgment, sufficiently often to protect workmen against ill effects. All workmen not otherwise examined are examined annually.

6. INSTRUCTION:

Employees are given instructions by physicians where necessary for the protection of their health.

7. RECORDS:

Records are essential to the maintenance of health and defense against unfair claims. They are, therefore, complete as to facts concerning each injury, illness and the findings of all physical examinations.

The foregoing is the outline of a health maintenance program only. It is supplemental to the usual functions of industrial medicine, the treatment of injuries, etc. The object is to secure a well-rounded medical service in each unit without infringement upon the rights of physicians in private practice.

There are two principles in the program:

(a) The physicians shall make periodic plant inspection, and

(b) They shall make physical examinations of applicants for employment and periodically thereafter of all workmen.

The purpose of the plant inspections is to acquaint the physician with the conditions under which workmen are employed in order that:

(a) They may have specific knowledge of possible disease exposures, and

(b) They may aid the men to obtain work suitable to their physical conditions.

The purpose of physical examinations is to acquaint the doctors with the conditions of health, body and mind of the workmen in order that:

(a) They may assist them to maintain their health and productiveness, and

(b) They may have information for the making of fair decisions on claims.

It is evident that plant inspections and physical examinations must be made by the doctors themselves, otherwise the information has little medical value.

For defense against unfair claims it is not necessary for plant doctors to be partisan, nor is it necessary for them to build up defense. Adjudication of compensation is not their function. It is their duty, however, to have accurate, complete records as to the physical contions of employees and such injuries and diseases as may occur in order that claims can be fairly judged.

General Motors has no centralized medical control, but a central consultation service is available to all units, covering the general principles of plant medical service, organization, quarters, equipment and functions.

Because of this decentralization, the doctors are their own medical authorities. They have been selected because of confidence in them, and so long as that confidence is warranted their careers are assured.

The qualities that assure permanency are professional knowledge and skill in applying it to the needs of industry. The latter is measured largely by their capacity to make and retain the friendship of the workmen. The doctors are the closest point of contact between management and men. They meet them in the examination rooms and on numerous occasions thereafter when workmen are receptive. All are excellent opportunities for physicians to cement the good feeling that General Motors desires to exist between management and men.

Car Owners Like Streamlines, Want Dependability, Economy

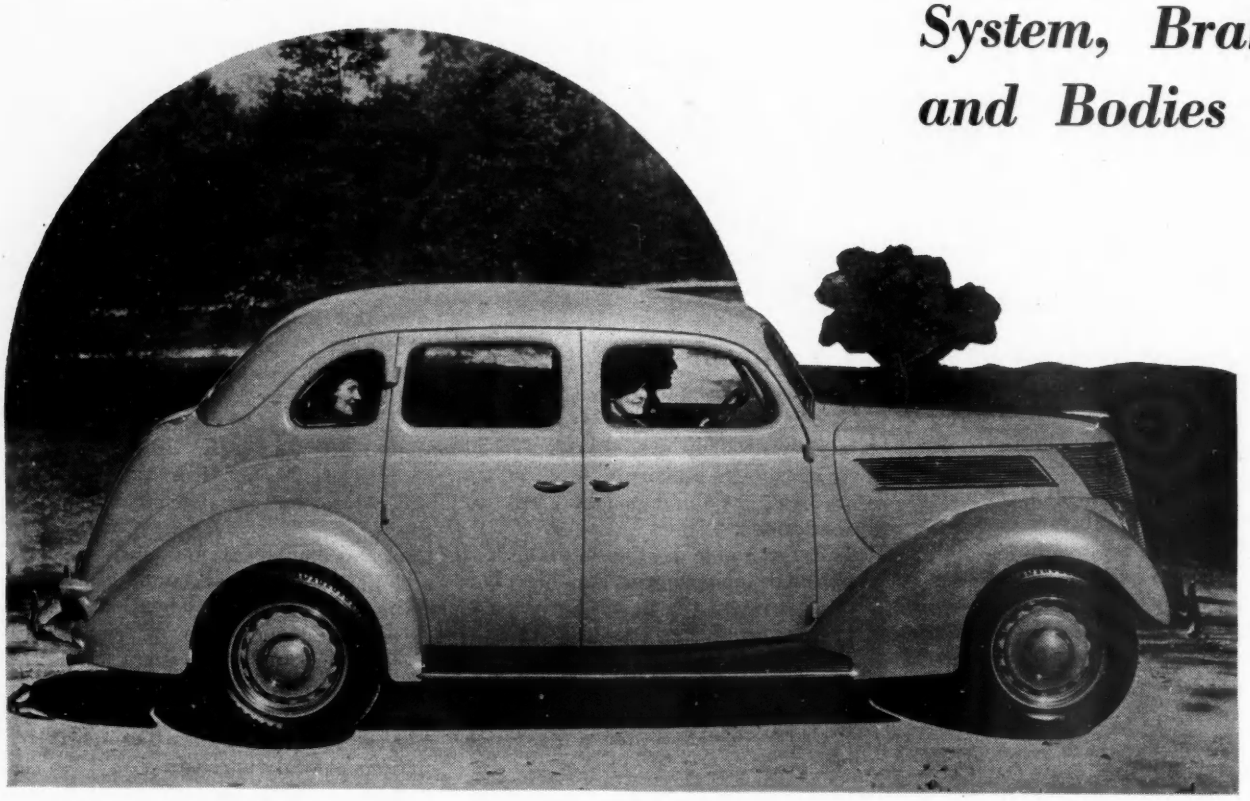
A marked increase in public approval of the modern trend toward streamline design in motor cars, was expressed during the past year in latest tabulations of the General Motors customer research questionnaires, mailed annually to over 1,000,000 motorists throughout the country who own all makes of cars.

The percentage of car owners voicing approval of streamline design in 1936 was 90.4 per cent as compared with 77 per cent a year ago.

Dependability and operating economy are the characteristics most desired in new 1937 cars, according to a consensus of questionnaire answers received by General Motors. The eight other characteristics most in demand by motorists were voted to be: safety, comfort, appearance, control, first cost, smoothness, pickup and speed.

Other interesting points revealed in the customer survey were: 85.2 per cent want solid steel tops on their next cars; 86.7 per cent voted for modern no-draft ventilation; 89.4 per cent favored stabilized front end construction; 71.8 per cent of all motorists expressed a desire for radio equipment; and 74.5 per cent favored level floors—free from obstructing "tunnels" fast disappearing from most the current models.

Engine, Cooling System, Brakes and Bodies on



The Ford V-8 touring sedan available with the 85-hp. engine with or without the de luxe appointments. With the 60-hp. engine de luxe models are not listed.

THE chief departure in Ford practice for 1937 consists in giving the customer a choice between two V-8 engines, of 60 and 85 hp. rating respectively, both being mounted on the same 112-in. wheelbase chassis. Rear-axle reduction ratios, of course, are different for the two engines. The new 60-hp. engine has been in production in England and France for more than a year; it is now being introduced on the American market for the first time, and its advent here marks a reversal in the trend toward ever-increasing engine powers. The 85-hp. engine is substantially the same as that used last year, although a number of refinements have been made in it, mainly to improve its oil economy and to insure more quiet operation.

Specifications of the Ford Engines

	85 hp.	60 hp.
Bore	3.062	2.60
Stroke	3.75	3.20
Displacement	221	136
Hp.	85 at 3,800	60 at 3,500
Weight	562 lb.	400 lb.
Compression ratio	6.12	6.75
Rear-axle ratio	3.78	4.44
Main-bearing diam.	2.4 in.	2.00 in.
Crankshaft length	24.47 in.	20.82 in.
Crankshaft weight	63½ lb.	45 lb.
Tax. hp.	30	21.63
Max. torque	149 lb.-ft. at 2,000	94 lb.-ft. at 2,500
Oil capacity	5 qts.	4 qts.
Cooling-system capacity	5.5 gal.	3.8 gal.

Among the more important changes in the Ford V-8 for 1937 are brakes of improved design, operated through cables in conduits and requiring about one-third less effort to apply; new body lines in which "tear-drop" forms have been used wherever possible; all-steel bodies, including steel roofs and steel floors; improved steering, and greater quietness in operation.

The new 60-hp. engine is about two-thirds the size of the larger unit; its bore is 2.6 and its stroke 3.2 in., making the piston displacement 136 cu. in. (as compared with 221 cu. in. for the larger engine). Equipped with the smaller engine the car is said to have a top speed of about 70 m.p.h., while 55-60 m.p.h. is a comfortable touring speed. The new engine has all of the principal mechanical characteristics of the older one, including cylinder blocks and crankcase cast integral, new cast alloy steel pistons, a cast alloy steel crankshaft, cast alloy iron camshaft, high chrome nickel alloy valves with high-tungsten chrome alloy steel valve seat inserts, floating connecting rod bearings, a dual downdraft carburetor, a high compression head, an air cleaner, directed-flow crankcase ventilation, and the new cooling system.

Most important among improvements made in the 85-hp. engine is the adop-

Ford for 1937 Revamped

tion of new cast alloy steel pistons, which permit of a closer fit in the cylinders, are more resistant to wear, decrease the oil consumption and operate more quietly during the warm-up period.

The cooling system has been redesigned to increase its capacity. The two water pumps have greater capacity and are located at the bottom of the cylinder blocks, drawing water from the bottom of the radiator, in accordance with conventional practice, instead of from the top of the engine jackets. The pumps are self-sealing and automatically lubricated from the timing-gear case. Water outlets are centrally located on top of the cylinder heads. The fan is of a new design and closer to the radiator core over its entire sweep.

Engines are supported on rubber cushions at four points. There are now two supports at the rear, one on each side of the transmission, and the rubber cushions forming the rear supports are similar to those used at the front. The crankshaft main bearings of the large engine have been increased in diameter to 2.4 in. Camshaft bearings of both engines are now of the replaceable steel-back babbitt type.

There is a difference in the transmissions that go with the two engines, in that in the one with the 85-hp. engine all of the gears, including those for the reverse, are of the helical type, while in the one with the 60-hp. engine only the first-reduction and second-speed gears are helical.

The principal specifications of the two powerplants and their accessories are given in the accompanying table.

Brake designs also have been revamped. The effort necessary to apply the brakes fully has been reduced by one-third, and the actuating mechanism now consists of conduit-sheathed cable. The new brakes are said to have controlled self-energization; that is to say, as the pedal goes down the servo action decreases, and when the pedal is all the way down there is no self-energization. The brakes themselves are patterned after the previous design. Cables leading from the frame to the brakes are enclosed in conduits. The other ends of these cables connect to lever arms on a stiff cross shaft. All of the levers required for actuating the various cables are in a single forging which also includes the connection to the hand brake. The parking brake lever is now under the instrument panel.

A new steering gear, of the worm-and-roller type, is now fitted, and has a larger gear ratio, 18.2. The steering wheel is of the three-spoke type, with the two upper spokes at 180 deg., so as to give the driver a good view of the instrument panel. Cross steering is employed, the drag link paralleling the

The 1937 Ford de luxe cabriolet is a convertible type available only with the 85-hp. engine.

front axle. Knuckle pins have been moved inward and their inclination has been changed to make steering easier.

Greater oil economy has been achieved by the provision of crankcase ventilation, and it is now recommended that oil changes be made only every 2000 miles. The air flow through the radiator due to the fan and the forward motion of the car produce an over-pressure under the hood, with the result that air enters the oil filler located there; it leaves the crankcase through a pipe which terminates in the air stream under the crankcase, where there is a depression or suction effect.

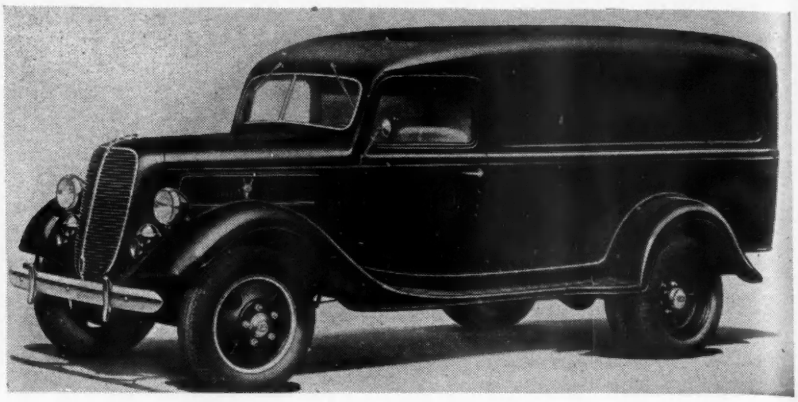
A number of improvements have been made in the electrical system. The battery is now housed under the hood, in a recess in the dash at the right side. One advantage of this location is that it shortens the cables to the starter and therefore reduces the voltage drop in them. Headlamps are faired into the fenders. The starter button is mounted on the dash.

No wood whatsoever is used in the construction of the new bodies. The steel stamping which forms the roof of closed cars extends from the top of the windshield back to below the rear window, and on opposite sides it extends down to the tops of the doors and the side panels. Bodies are more effectively insulated against noise. Moreover, there is no metal-to-metal contact between frame and body, the bodies resting on rubber and the bolts securing them being surrounded by rubber bushings. Other steps taken to insure more quiet operation include rubber-mounting of the engine, a new fan design, refinements in the rear axle, and a new positive interleaf-spring-lubrication system. Changes have been made also in the muffler and the exhaust pipe, and the muffler is now completely insulated from the frame by rubber in the mounting brackets.

Eleven body types are available, including new de luxe club coupe, seating five passengers. The new coupe is close-coupled, with an enclosed rear seat.

The Tudor, Fordor, Tudor touring and Fordor touring sedans and the five-window coupe are available either with or without de luxe fittings and with either engine size. The roadster, phaeton, club coupe, convertible cabriolet, club cabriolet and convertible sedan are de luxe types, available only with the 85-hp. engine.

Six colors, including four which are new this year, are available. De luxe cars will be available in all six colors. The two most popular colors, black and Washington blue, as well as a new color, gull gray, are available in both standard and de luxe types. The other three colors —bright vineyard green, autumn brown, and bright coach maroon—are available only in de luxe types. It is of interest in this connection that in recent months Ford color specifications have run 35 per cent black and 30 per cent dark blue.



New Ford V-8 delivery car furnished with either 60 or 85 hp. engine.

The new body designs permit unusually roomy luggage compartments in all cars. Except in the coupes, cabriolets and roadster, the spare wheel is carried in the rear compartment. In these types space is provided back of the driver's seat. The luggage compartments in the sedans are large enough to carry five pieces of luggage of average size, as well as a number of smaller articles. In the single-seat models the compartment may also be reached by tilting forward the passenger seat back.

Upholstery may be had in either mohair or broadcloth, at the option of the purchaser. In de luxe cars the moldings are in American walnut finish, while in the standard cars they are in mahogany finish. Hardware in the former models has pyroxyline finish; in the latter, chrome finish. Tudors have full-width, divided-back front seats. Front seats rise as they move forward.

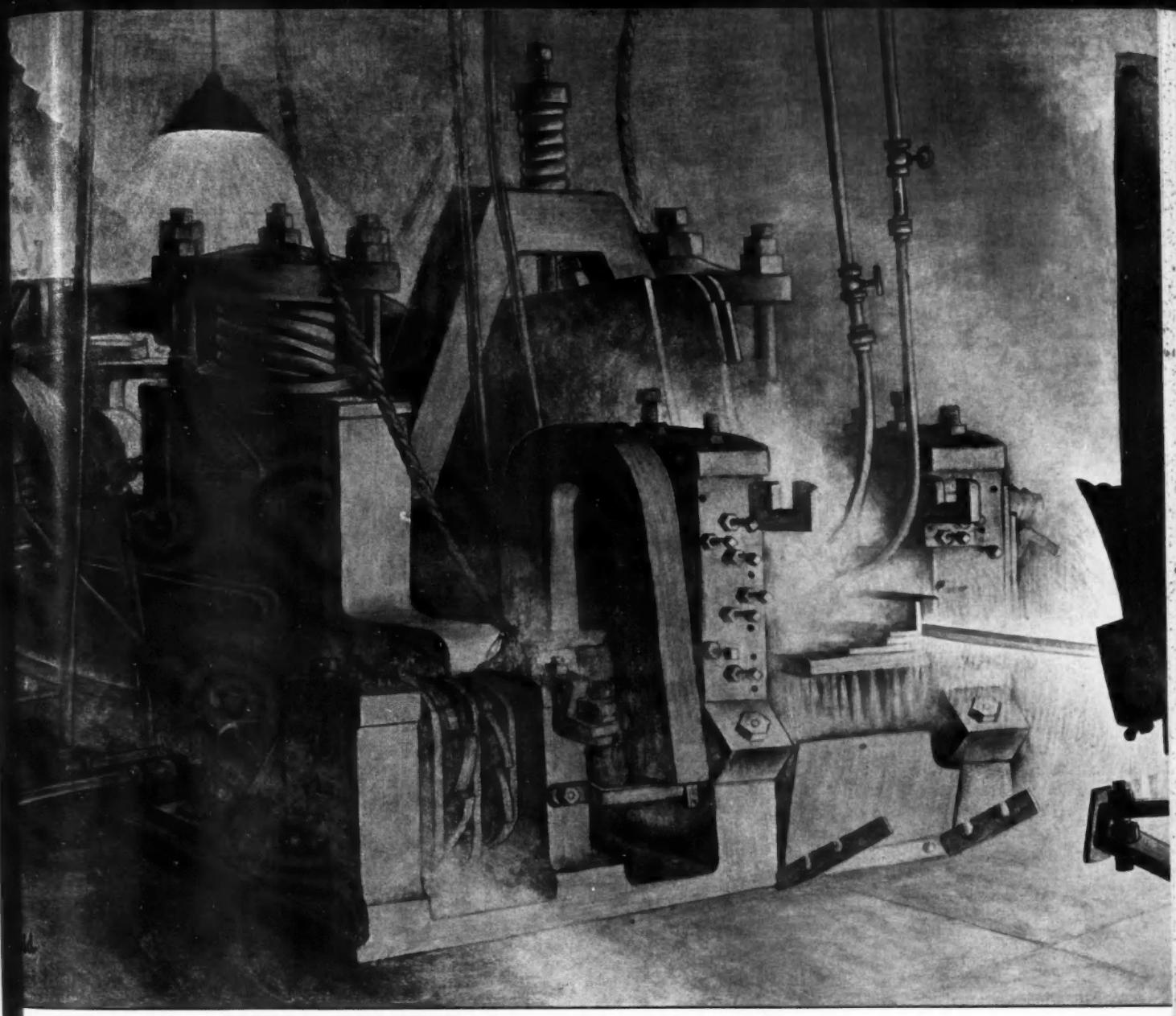
Tire Prices and Discounts Changed

Consumer list prices are increased approximately five per cent, with trade discounts completely realigned under the tire industry's new price stabilization program which became effective Nov. 2 with practically all manufacturers cooperating. The increase in consumer lists is accompanied by a two and one-half per cent reduction in dealer trade discounts, and with an increase in earned volume bonuses to offset the reduction in trade discounts. Heretofore, on first and second lines, dealers operated on a standard trade discount of 22½ per cent and on an earned volume bonus program which ranged from two and one-half to seven and one-half per cent, the maximum bonus being seven and one-half per cent on $20,000 or more volume per year. In addition, dealers were entitled to monthly bonuses of two and one-half per cent on orders of $100 or more. Under the new program, the trade discount is reduced to 20 per cent, the earned volume bonus is changed to start at one per cent and goes to a maximum of 10 per cent on $15,000 or more, and the monthly bonus is increased to five per cent. On third and fourth line tires, where list prices are slightly reduced, trade discounts have been reduced from 20 per cent to 17½ per cent.

Under the 1936 price stabilization program commercial accounts received a 12½ per cent discount from list price with preferred national accounts receiving a 22½ per cent discount. These now are all standardized at 15 per cent.

With the launching of the new program many manufacturers announced their spring dating programs under which they start solicitation of dealer orders Nov. 15 for 1937 delivery on deferred payments.

Manufacturers say that the new program will primarily benefit the smaller dealers, will increase the net recoveries for all dealers and will in some measure benefit the manufacturers. The standardization of commercial and national accounts on the same price level, with the 10 per cent differential wiped out, will tend further to stabilize prices, observers say.



Machine for hot-forging track spikes in Bethlehem's Lebanon, Pa. Plant

Always seeking the best process

THROUGH the entire range of steel products manufactured by Bethlehem no stone is left unturned to give them properties making them definitely superior in their respective fields.

An excellent illustration of this policy is found in the manufacture of track spikes. These are among the simplest of finished steel products, ordinarily considered as calling for but little refinement in manufacture, but Bethlehem makes them by hot-forging —fundamentally the same process used to make vital parts of automobiles, locomotives and other machines where the highest degree of ruggedness is required.

This attention to small details affecting serviceability, handling or fabricating is characteristic of all Bethlehem products from bethanized wire, zinc-coated by a special electrical process, giving a vastly more durable coating, to controlled-cooled rails, processed in a way that eliminates transverse fissures.

BETHLEHEM STEEL COMPANY

Steels that facilitate Motor Vehicle Production

SHEETS AND STRIP

In Bethlehem's new continuous sheet, strip and plate mill all possible refinements for hot-rolled and cold-rolled sheets and strip for which there is any commercial demand are provided, and at the same time the mill is equipped to roll and finish light plate up to one-half inch in thickness.

Wide strip up to 60 inches in width by 0.0625 inch in thickness and 72 inches in width by 0.078 inch in thickness, with a minimum width of 18 inches by 0.05 inch in thickness, can be continuously hot-rolled in one heating in the new Bethlehem hot mill.

Cold-rolled strip is produced by Bethlehem in a range from 18½ inches to 72 inches wide and from 0.0125 inch in thickness for narrow widths up to 0.109 inch in thickness. By cross-rolling in the 93-inch, 4-high, skin pass mill sheets may be rolled up to 84 inches in width.

SPECIAL-PURPOSE CARBON STEELS

Efficient metallurgical control in melting and heat-treating as well as accurate control of rolling temperatures give Bethlehem Carbon Steels suitability to a wide range of responsible tasks. Special-Purpose Carbon Steels, as Bethlehem makes them, have strength and fatigue-resistance combined with easy machining qualities that make them the logical steels for an increasing list of automotive applications.

ALLOY STEELS

A close liaison that has been long maintained by Bethlehem with automobile metallurgists plays its part in the production and development of Bethlehem Alloy Steels. They consistently meet an ever more-insistent demand for lighter, stronger metals, essential to more dependable and economical automotive transportation.

While Bethlehem Alloy Steels bring greater strength and durability, this close-working relationship with the industry has also often been of assistance in developing properties that simplify heat treating, facilitate machining or effect other economies.

SILVERY MAYARI ALLOY IRON

A natural nickel-chromium-alloy iron with a high silicon content, offering a simple, economical method of making fine-grained machinable alloy-iron castings.

STAINLESS STEELS

Bethadur and Bethalon cover practically every requirement for stainless steels, including the free-machining grades.

TOOL STEELS

Every detail in the manufacture of Bethlehem Tool Steels is handled in the way that long experience has shown to result in the finest product. For each of the many exacting tool-steel uses in the automotive industry there is a grade of Bethlehem Tool Steel that will meet every demand.

STEEL WIRE

Bolt and screw wire; spoke wire, spring wire.

ROLLED SECTIONS

Special rolled sections developed by Bethlehem can be used with decided savings in the manufacture of a wide variety of parts. The use of these sections, many of which have been designed for automotive parts, has brought economies to many manufacturers.

BOLTS AND NUTS

Bethlehem's large, self-contained Lebanon Plant is devoted wholly to the manufacture of bolts, nuts and related products, and produces a complete range of standard items, and many "specials."

BETHLEHEM STEEL COMPANY, *General Offices:* Bethlehem, Pa. *District Offices:* Albany, Atlanta, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Hartford, Honolulu, Houston, Indianapolis, Kansas City, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Portland, Ore., Salt Lake City, San Antonio, San Francisco, St. Louis, St. Paul, Seattle, Syracuse, Washington, Wilkes-Barre, York. *Export Distributor:* Bethlehem Steel Export Corporation, New York.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL

The Horizons of Business

(*Continued from page 675*)

then the practical man has but two alternatives. He either proceeds blindly or does not proceed at all.

Pursuing the Fugitive "Normal"

There are numerous qualifications which the business man using the conventionalized forecast as a point of departure for his own reasoning must bear in mind. The first is that the above calculations are aimed at the next business peak rather than at some level below the peak which might be considered a normal or sound level. Just how to discount for the excess which any peak in business implies is a problem. Colonel Ayres draws a line determined by the trough points of the last two depressions and another line determined by the peaks of the last two business booms. Halfway between these two lines is his "normal." If we apply this method to the Federal Reserve industrial production line we find we are at normal levels now.

Building Up an Index

We can resort to more complicated methods of correction. Some of our best indexes are built up from a number of narrower indexes, e.g., car loadings, power production, coal output, construction, etc. A normal line is fitted to each of the component curves and the index uses this normal line as a base. The Standard Statistics monthly index and the Herald-Tribune weekly index are good examples of this method. It avoids the error of using the next probable peak as a "normal."

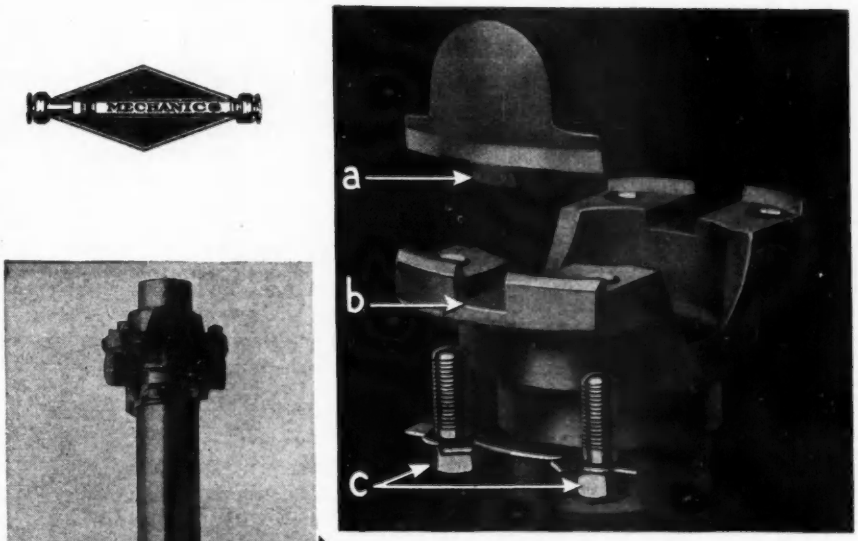
Forecast for Coming Year

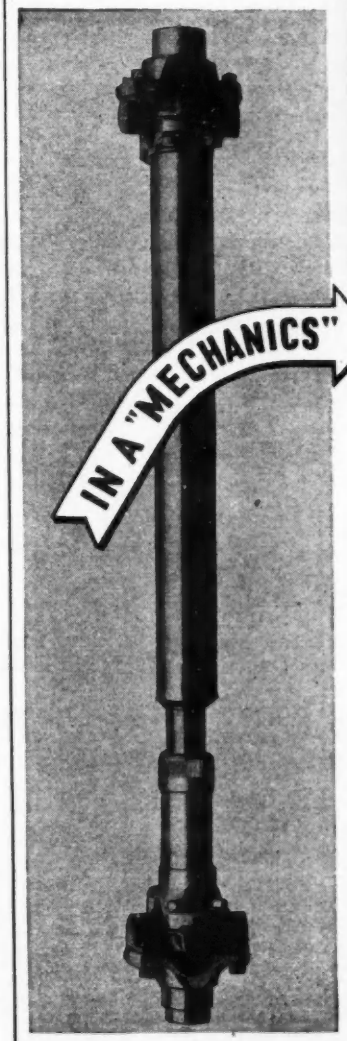
Such indexes are surprisingly uniform measuring present business volume as somewhere between 85 to 90 per cent of normal. They also show an improvement over the last twelve months, i.e., from October 1935 to October 1936 of 20 per cent. An improvement of 15 per cent during the next twelve months will bring us to a level of business activity which most statisticians would be inclined to consider as normal. It is our belief that business during this twelve month period will show gains of from 10 to 15 per cent over the level prevailing on the 1st of November, 1936.

Intangible Qualifications

Other qualifications which must be applied to the first crude conventionalized forecast are intangible. Another four years of the New Deal, the decisions of the Supreme Court, the action of organized labor, developments in Europe, all these may individually or in various combinations affect the course of business accelerating or retarding the rate of improvement, raising or lowering the normal plateau of business activity.

Next to the general business picture the matter of greatest moment for tomorrow is the course of the stock market. A study of business and stock market movements in the past shows that they move in the same direction two out of every three times. On the third occasion the market does nothing or moves in the opposite direction. A good illustration of the latter was the April-May reaction this year when the





Integral Keys Transmit Torque

Heavy keys (a) on the bearing and corresponding keyways (b) in the flanges, accurately machined out of solid metal, transmit all of the torque in Mechanics Roller Bearing Universal Joints. Two cap screws (c) hold each bearing securely in place against the flange . . . this is their only function . . . they have a high factor of safety . . . they are locked in position when assembled. With integral keys for driving, powerful screws for holding, simple compact design, high safety factor, accurate machining, perfect balance, roller bearings, and complete lubrication—Mechanics Universal Joints are rugged, dependable, economical; used in leading passenger cars, trucks, and busses. Investigate.

MECHANICS UNIVERSAL JOINT DIVISION
Borg-Warner Corp. 1301 18th AVE., ROCKFORD, ILLINOIS

standard 90 stock index lost 10.5 per cent while business gained 8.2 per cent.

Outlook Is Bullish

The broad outlook for the market from this point is bullish. Brokers' loans have been a negligible factor in pushing security prices to their present levels. Unattractive interest rates paid by banks are directing the attention of many owners of modest capital funds to the stock market via the investment trust. This money runs into huge aggregates. Because of technical portfolio operating conditions as well as trust liabilities the bulk of these funds are invested in the market leaders and tend to force prices upward. Furthermore, many trusts which are not of the self-liquidating, open end variety and which, for that reason, are subject to the heavy surplus profits tax of the Revenue Act of 1936 hesitate to liquidate profitable positions for fear of heavy tax penalties. This tends to peg the market in much the same manner as the capital gains tax.

Foreign Buying

Two other factors of a bullish character in the market are foreign buying and low money rates. Disturbed conditions in Europe have sent hundreds of millions to this side of the Atlantic, the great bulk of which is invested in marketable securities. With frantic competitive preparations for war in Europe the time when these funds are repatriated and the securities in which they are invested liquidated, appears remote. During the visible future the trend will probably continue toward the U. S.

Low Money Rates

The money market has not been a free market for some years and it is difficult to see when, if ever, it will again become a free, normal market in which the supply and demand for funds will determine the rate. The government dominates and controls the market. It is to the interest of the Treasury to keep rates low, both because it will reduce the service of the huge government debt and because a low interest rate is presumed, in orthodox theory at least, to have a stimulating effect upon business.

Stock Prices Are High

On the other side of the market is the fact that the investing public is already paying high prices for earnings. The cost of the earned dollar is approximately as high as it was in 1929. In buying a company that is just emerging from a deficit, price earnings ratios are meaningless. Such is not the type of discounting to which we refer. We have in mind companies like Johns-Manville and General Electric whose prices take for granted a substantial future improvement in earnings. On the other side is the fact that high prices are not being paid indiscriminately for earnings and that the market is still a keenly selective market.

Vanishing Farm Surpluses

Farming presents another gratifying facet of the business picture. The surpluses which weighed so heavily upon agriculture during the depression years seem to have been corrected. The world will have about 300 million fewer bushels of wheat than last year. The carryover of cotton has been reduced from 9,000,000 to 7,000,000 bales. The consumption of cotton this year has increased 11 per cent, of which increase the United States accounted for a quarter and the rest of the world the other three-quarters. The unit price for agricultural products has risen enough to more than offset the drop in volume.

Rising Cash Income

During the first eight months of this year the American farmer received $550 million more cash income than in the same period last year. This, in spite of the fact that cash payments from the government declined $145 million. The price of farm products and their exchange status *vis a vis* other goods have undergone a beneficial transformation during the last four years. In 1932 farm prices were 35 per cent below the pre-war level. This year they are 25 per cent above that level. In terms of goods which the farmer must buy for his living and his business the unit value of his products has increased from 61 per cent of the pre-war ratio in 1932 to 98 per cent in the fall of 1936. Prodigious increases in the sales of mail order houses and rural retail stores indicate a strong revival of farm buying power. The farmer's difficulties from this point on will be political rather than economic.

In the face of all this what prospect do the next four years hold for the automobile industry. A four year prediction for any industry is more than difficult. It is fantastic and for that reason will not be offered.

Attractive Prospect for Automobiles

The prospect of the industry is attractive because it is fortunate in the quality of its management and its successful resistance—to date—of new economic theories. It has driven with an intense, concentrated purpose toward a single objective, i.e., better cars at lower prices. Impelled by competitive stresses rather than conscious rationalization it has increased buying power directed toward automobiles, not by raising costs but by lowering prices and improving the product. It is a tribute to the industry that millions of citizens would rather own a car than a home.

As long as the industry adheres to its established practice of increasing buying power by reducing prices, its future will continue bright.

Carrier Act Explained to Truckmen

(*Continued from page 667*)

for a few minutes on some of the underlying principles of tariff construction.

At the second session on Wednesday evening, Austin Wolf, consultant, gave his paper, "Engineering Developments of 1937." He showed pictures of the new cars and discussed the latest developments introduced. Herbert Chase, consulting engineer and journalist, gave briefly his impressions of improvements and changes incorporated into the 1937 models.

For the final session the next afternoon, A. J. Blackwood, research engineer, Standard Oil Development Co., read a paper entitled "Some Recent Observations on American and European Diesels." Martin Shreiber, general manager in charge of plant, Public Service Coordinated Transport, spoke on "Diesel Engines in Highway Transport" and "Modern Practice and Latest Innovations Appearing in America and Europe." Mr. Shreiber has recently visited Europe and showed a number of interesting pictures of Diesel application in foreign countries. The final speaker of the afternoon, Guy W. Wilson, transportation engineer, General Electric Co., gave an illustrated talk entitled "Why the Electric Drive Is Particularly Adapted To and Practically Necessary With a Diesel —What Developments Have Reduced Weight and Cost of Electric Drive to Economical Basis."

Discussion at this Diesel session was by far the sharpest and liveliest of the whole series and was stopped only because it was necessary to prepare the room for the banquet activities held the same evening.